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BUREAU OF AMERICAN ETHNOLOGY
BULLETIN 182

Inter-Agency Archeological Salvage Program

RIVER BASIN SURVEYS PAPERS

Frank H. H. Roberts, Jr., *Editor*

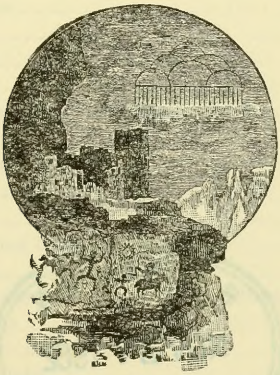
No. 25—ARCHEOLOGY OF THE JOHN H. KERR RESERVOIR BASIN, ROANOKE RIVER VIRGINIA-NORTH CAROLINA, by

Carl F. Miller

WITH APPENDIX

HUMAN SKELETAL REMAINS FROM THE TOLLIFERO (Ha6) AND CLARKSVILLE (Mc14) SITES, JOHN H. KERR RESERVOIR BASIN, VIRGINIA

By Lucile E. Hoyme and William M. Bass



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LETTER OF TRANSMITTAL

SMITHSONIAN INSTITUTION,
BUREAU OF AMERICAN ETHNOLOGY,
Washington, D.C., September 28, 1960.

SIR: I have the honor to submit the accompanying manuscript, entitled "Archeology of the John H. Kerr Reservoir Basin, Roanoke River, Virginia–North Carolina," by Carl F. Miller, which is to be No. 25 of the River Basin Surveys Papers, and to recommend that it be published as a bulletin of the Bureau of American Ethnology.

Very respectfully yours,

FRANK H. H. ROBERTS, JR.,
Director.

DR. LEONARD CARMICHAEL,
Secretary, Smithsonian Institution.

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PUBLISHER'S NOTE

A separate edition is published of each paper in the series entitled "River Basin Surveys Papers." Available copies of Papers 1–25 can be had upon request to the Publications Office, Smithsonian Institution, Washington 25, D.C.

River Basin Surveys Papers Published Previously

No. 1. Prehistory and the Missouri Valley Development Program: Summary Report on the Missouri River Basin Archeological Survey in 1948, by Waldo R. Wedel. Bull. 154, pp. xv–xviii, 1–59, pls. 1–12, fig. 1. 1953.

No. 2. Prehistory and the Missouri Valley Development Program: Summary Report on the Missouri River Basin Archeological Survey in 1949, by Waldo R. Wedel. Bull. 154, pp. 61–101, pls. 13–15. 1953.

No. 3. The Woodruff Ossuary, a Prehistoric Burial Site in Phillips County, Kansas, by Marvin F. Kivett. Bull. 154, pp. 103–141, pls. 16–28, figs. 2–3. 1953.

No. 4. The Addicks Dam Site:
  I. An Archeological Survey of the Addicks Dam Basin, Southeast Texas, by Joe Ben Wheat. Bull. 154, pp. 143–252, pls. 29–47, figs. 4–23. 1953.
  II. Indian Skeletal Remains from the Doering and Kobs Sites, Addick Reservoir, Texas, by Marshall T. Newman. Bull. 154, pp. 253–266, figs. 24–28. 1953.

No. 5. The Hodges Site:
  I. Two Rock Shelters near Tucumcari, New Mexico, by Herbert W. Dick. Bull. 154, pp. 267–284, pls. 48–54, figs. 29–30. 1953.
  II. Geology of the Hodges Site, Quay County, New Mexico, by Sheldon Judson. Bull. 154, pp. 285–302, figs. 31–35. 1953.

No. 6. The Rembert Mounds, Elbert County, Georgia, by Joseph R. Caldwell. Bull. 154, pp. 303–320, pls. 55–56, figs. 36–40. 1953.

No. 7. Archeological Investigations in the Oahe Dam Area, South Dakota. 1950–51, by Donald J. Lehmer. Bull. 158, 190 pp., 22 pls., 56 figs., 6 maps. 1954.

No. 8. Excavations in the McNary Reservoir Basin near Umatilla, Oregon, by Douglas Osborne. With appendixes by Marshall T. Newman, Arthur Woodward, W. J. Kroll, and B. H. McLeod. Bull. 166, 250 pp., 40 pls., 6 figs., 19 maps. 1957.

No. 9. Archeological Investigations in the Heart Butte Reservoir Area, North Dakota, by Paul L. Cooper. Bull. 169, pp. 1–40, pls. 1–12, figs. 1–2. 1958.

No. 10. Archeological Investigations at the Tuttle Creek Dam, Kansas, by Robert B. Cumming, Jr. Bull. 169, pp. 41–78, pls. 13–24. 1958.

No. 11. The Spain Site (39LM301), a Winter Village in Fort Randall Reservoir, South Dakota, by Carlyle S. Smith and Roger T. Grange, Jr. Bull. 169, pp. 79–128, pls. 25–36, figs. 3–4. 1958.

No. 12. The Wilbanks Site (9CK–5), Georgia, by William H. Sears. Bull. 169, pls. 37–45, figs. 5–9. 1958.

No. 13. Historic Sites in and around the Jim Woodruff Reservoir Area, Florida-Georgia, by Mark F. Boyd. Bull. 169, pp. 195–314, pls. 46–55, figs. 10–11. 1958.

No. 14. Six Sites near the Chattahoochee River in the Jim Woodruff Reservoir Area, Florida, by Ripley P. Bullen. Bull. 169, pp. 315–357, pls. 56–73, figs. 12–13. 1958.

No. 15. Historic Sites Archeology on the Upper Missouri, by Merrill J. Mattes, Bull. 179, pp. 1–24.

No. 16. Historic Sites Archeology in the Fort Randall Reservoir, South Dakota, by John E. Mills. Bull. 176, pp. 25–48, pls. 1–9, figs. 1–2, map 1. 1960.

No. 17. The Excavation and Investigation of Fort Lookout Trading Post II (39LM57) in the Fort Randall Reservoir, South Dakota, by Carl F. Miller. Bull. 176, pp. 49–82, pls. 10–18, figs. 3–14, map 2. 1960.

No. 18. Fort Pierre II (39ST217), a Historic Trading Post in the Oahe Dam Area, South Dakota, by G. Hubert Smith. Bull. 176, pp. 83–158, pls. 19–30, maps 3–4. 1960.

No. 19. Archeological Investigations at the Site of Fort Stevenson (32ML1), Garrison Reservoir, North Dakota, by G. Hubert Smith. (Introduction by Robert L. Stephenson and an appendix by Carlyle S. Smith). Bull. 176, pp. 159–238, pls. 31–54, figs. 15–20, maps 5–6. 1960.

No. 20. The Archeology of a Small Trading Post (32MN1) in the Garrison Reservoir (Kipp's Post), South Dakota, by Alan R. Woolworth and W. Raymond Wood. Bull. 176, pp. 239–305, pls. 55–65, figs. 21–25, map 7. 1960.

No. 21. Excavations at Texarkana Reservoir, Sulphur River, Texas, by Edward B. Jelks. Bull. 179, pp. xiii-xviii and 1–78, pls. 1–17, figs. 1–9.

No. 22. Archeological Investigations at the Coralsville Reservoir, Iowa, by Warren W. Caldwell. Bull. 179, pp. 81–148, pls. 18–29, figs. 10–24.

No. 23. The McNary Reservoir: A Study in Plateau Archeology, by Joel L. Shiner. Bull. 179, pp. 151–266, pls. 30–46, figs. 25–40, maps 1–7.

No. 24. The Sheep Island Site and the Mid-Columbia Valley, by Douglas Osborne, Alan Bryan, and Robert H. Crabtree. Bull. 179, pp. 269–306, pls. 47–56, figs. 41–43.

EXPLANATION OF THE INTER-AGENCY ARCHEOLOGICAL SALVAGE PROGRAM

The Inter-Agency Archeological Salvage Program is a cooperative plan of the Smithsonian Institution; the National Park Service and the Bureau of Reclamation, Department of the Interior; and the Corps of Engineers, Department of the Army. It was formulated, through a series of interbureau agreements, for the purpose of recovering archeological and paleontological remains which would otherwise be lost as a result of the numerous projects for flood control, irrigation, hydroelectric power, and navigation improvements in the river basins of the United States. Various State and local agencies have assisted in the work. To carry out its part of the joint undertaking, the Smithsonian Institution organized the River Basin Surveys as a unit of the Bureau of American Ethnology. The National Park Service has served as liaison between the various agencies and has provided the Smithsonian Institution with all the necessary information pertaining to the location of proposed dams and other construction and their priorities. It has also had responsibility for budgeting costs of the program, funds for which are provided in the annual Department of the Interior appropriations. The operations of the River Basin Surveys, Smithsonian Institution, have been supported by funds transferred to it from the National Park Service. Through agreements with the National Park Service, money has also been made available to State and local agencies to supplement their own resources and aid them in their contributions to the program.

The River Basin Surveys Papers, of which this is the seventh bulletin, are issued under the scientific editorship of Frank H. H. Roberts, Jr., director of the Bureau of American Ethnology.

FOREWORD

Virginia, a rich field for the historian, has recently become a rich field for the archeologist. A few initial studies have been conducted in Virginia, but no serious investigations have been made to determine the extent of coverage of time when *Homo sapiens sapiens* first arrived, the tools he devised, and how his culture slowly developed until contact was made with the recently arrived white man into this country.

At the present time the overall archeology of Virginia is based on much too broad and superficial treatments to be of any practical value to the serious student. Investigators in the past dealt mostly with surface indications, which at their best are only cursory.

Virginia, unfortunately, does not have a climate that preserves perishable remains: only the most durable materials have persisted from the earliest times to the present day. This has limited our knowledge of both the Early Hunters (Paleo-Indian) and the later Indian (Neo-Indian) economies. We know from fictile remains that the Indian was well cognizant of fibers and their associated industries, such as the weaving of cloth, mats, and baskets and the making of string and other cordage, as well as of companion arts. From the same source we learn of the Indians' knowledge of tanning and working leather goods and of their ability to construct various types of wooden utensils and implements.

A number of lithic industries from our earliest cultural horizons are well represented. Several examples resemble a number of Old World stages as to both shape and chipping tradition, but they are not comparable as to time. Examples are sufficiently numerous to demonstrate various phases of change that can be traced up to and beyond the introduction of pottery into the later Indian occupation.

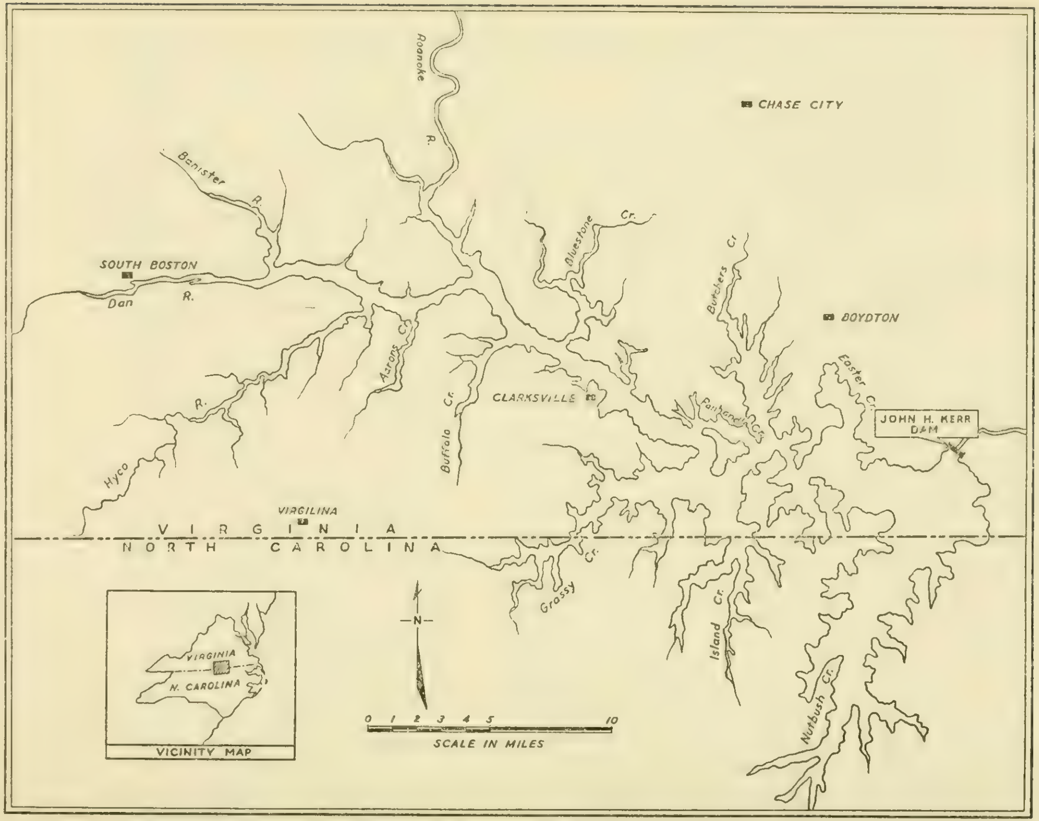
The advent of pottery making did not enrich the lithic industry but instead assigned it to a secondary role, since it made the Indian restrict his sphere of roaming and eventually converted him to a sedentary, agricultural way of life. Thus he was made less dependent upon his former hunting-gathering habits of life, and this was reflected in the many changes and modifications in his lithic tools.

The area under consideration is virtually an archeological "no-man's" land, since little is known of the cultures that formerly existed here. Although some sporadic investigations were made in the past, this region has remained a hiatus in knowledge up to the time of the present work. Then, too, the earlier ethnic and linguistic studies that were made during the late 19th and early 20th centuries proved to be of little value in correlating the historic Indian groups with the area under question (Miller, 1957).

The sustained vigor and dominance of the Eastern Siouan hypothesis, despite its lack of corroboration, caused me to shift my course of inquiry temporarily toward the origin of this myth—how it came to be foisted upon the scientific world and why it became accepted so wholeheartedly as to require so much activity in an attempt to dispel its falsity. So completely has this theory been ingrained and accepted that it persists as the truth in current literature because of usage by well-known proponents, because its real source has never been exposed and its implications critically examined, and because it is still being taken as the truth by those who have not bothered to check the validity of the various sources. Theories such as this are long lived and do not fade away even though they have been disproved.

Earlier the area of the John H. Kerr Dam and Reservoir was encompassed within the Siouan sphere of influence by such workers as Hale (1883), Mooney (1894), Swanton (1922, 1946, 1952), Bushnell (1922, 1927), and Griffin (1945). In view of later research, the writer (Miller, 1957) was unable to endorse and embrace this tenet, and this probably also holds true for the rest of the Eastern Siouan premise.

This section of southern Virginia and northern North Carolina, an important one, forms a connecting link between the North and South. With the exception of an archeological reconnaissance conducted by Joffre Coe, of the University of North Carolina, studies made on Occaneechi Island and at the Staunton River State Park by Charles W. Porter and H. Summerfield Day, and later by Jean C. Harrington, of the National Park Service, together with a survey by Clifford Evans (1955) for the University of Virginia, no systematic archeological investigations have been carried on in this area. Consequently, the archeological complexes of the region have never been fully defined or understood.


CHASE CITY
BOYDTON
Roanoke R.
Banister R.
SOUTH BOSTON
Dan R.
Bluestone Cr.
Butchers Cr.
Easter Cr.
JOHN H. KERR DAM
Panhandle Cr.
CLARKSVILLE
Aarons Cr.
Buffalo Cr.
R.
Hyco
VIRGILINA
VIRGINIA
NORTH CAROLINA
Grassy Cr.
Island Cr.
Nutbush Cr.
N
0 1 2 3 4 5 10
SCALE IN MILES
VIRGINIA
N. CAROLINA
VICINITY MAP

Map 1.—John H. Kerr Reservoir area, Virginia and North Carolina.

ARCHEOLOGY OF THE JOHN H. KERR RESERVOIR BASIN, ROANOKE RIVER, VIRGINIA–NORTH CAROLINA

By Carl F. Miller

INTRODUCTION

RECONNAISSANCE AND SURVEY

During the period from February 14 to May 1, 1947, a preliminary archeological reconnaissance was made of the John H. Kerr[1] (formerly Buggs Island) Reservoir area in Mecklenburg, Halifax, and Charlotte Counties, in Virginia, and Warren, Vance, and Granville Counties, in North Carolina, by the River Basin Surveys of the Smithsonian Institution (Miller, 1947). The work was done at the request of the National Park Service, which, in turn, cooperated with the United States Corps of Engineers in making studies of the reservoir projects. This project was carried on as one phase of the general salvage program of the River Basin Surveys, Smithsonian Institution.

The primary purpose of this reconnaissance was to locate all archeological sites, or as many as possible, within the reservoir limits; to appraise their informational values; and to determine which of them covered the entire archeological range. The original sites were located by means of inquiry and exploration. Investigations were limited, for the most part, to surface examination, to testing, and to the examination of various local collections.

Coverage of the basin was by foot and by jeep.

Site locations were recorded on maps furnished by the U.S. Corps of Engineers, and data pertaining thereto were recorded in the form of field notes, site descriptions, sketch maps, and photographs. The subsequent purpose of the survey was not only to briefly describe all the archeological sites within the limits of the reservoir area but later to excavate a number of "key sites," furnishing complete cultural coverage of the prehistoric occupation represented therein.

The principal cities in the immediate area of the reservoir are Boydton, Chase City, and Clarksville in Mecklenburg County, Va.;

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[1] The name of the Buggs Island Dam and Reservoir was changed by Public Law No. 205, 82d Congress, as of October 24, 1951, to the John H. Kerr Dam and Reservoir.

South Boston and Virgilina in Halifax County, Va.; Charlotte Court House in Charlotte County, Va.; Warrenton in Warren County, N.C.; Henderson in Vance County, N.C.; and Oxford in Granville County, N.C. The base of operations for the first season was in South Boston, and for subsequent seasons in Clarksville because this city proved to be more centrally located within the limits of the reservoir.

Both the U.S. Corps of Engineers and the National Park Service aided and abetted the project in every way and made all possible efforts to facilitate the work.

The District Engineers of the U.S. Corps of Engineers arranged for office space in the field, supplied maps and various reports, and provided appropriate field transportation facilities for the type of terrain to be covered by the survey. They also furnished additional maps which were used in copies of the paper entitled "Appraisal of the Archeological Resources, Buggs Island Reservoir, in Mecklenburg, Halifax, and Charlotte Counties, Virginia; Warren, Vance, and Granville Counties, North Carolina, October, 1947" (Miller, 1947), prepared by the River Basin Surveys, Smithsonian Institution. The Engineering personnel cooperated wholeheartedly during the process of the survey and rendered considerable help in various ways.

The Region 1 Office of the National Park Service, Richmond, Va., made available previous reports on certain archeological manifestations in the area and served as liaison between the Smithsonian Institution and the District Engineers, U.S. Corps of Engineers, while preliminary arrangements were being made. The assistance of these agencies is greatly appreciated.

In addition, the survey is indebted to Mr. William Maxey, of Richmond, Va., Mr. and Mrs. James V. Howe, of Jeffress, Va., Mr. Arthur Robertson, of Chase City, Va., Judge John Tisdale, of Clarksdale, Va., and Mrs. Ruth Northington, of La Crosse, Va., for guiding the writer to a number of sites in and immediately outside of the reservoir basin. The writer wishes to express his deep appreciation to Dr. Frank H. H. Roberts, Jr., director of the River Basin Surveys, Smithsonian Institution, for his suggestions and guidance, to Mr. Floyd Kestner and his staff for the remarkable photographs and Mr. Edward Schumacher for the line drawings used to illustrate this report, to Mrs. Eloise B. Edelen and Mrs. Phyllis W. Prescott for editing the manuscript, and finally to Mrs. Ruth W. Miller for her help in excavating many of the sites.

With the completion of several site excavations by the River Basin Surveys, it is now possible to present the analysis of the aboriginal occupations of the John H. Kerr Reservoir Basin and to denote any possible tie-in with the nearby Philpot Reservoir area in the vicinity of Martinsville, Henry County, Va. Therefore, I propose to present a chronological and cultural sequence based upon the materials collected during the initial survey and from actual excavations, and those examined in private collections. The conclusions presented are not to be taken as conclusive for the general southern province of Virginia but for only the areas under examination. Since some of the data were derived from surface indications, these do not, in any fashion, pretend to give the factual picture of occupancy that would be revealed by excavation of the site or sites in question, and hence can only be assessed accordingly. Surface indications are not sufficiently sensitive to be all inclusive, since they represent only that portion of a site which had been stirred up by late occupations or long periods of intensive cultivation; therefore the conclusions cannot be compared with those found by actual excavations.

RESERVOIR LOCATION AND CHARACTER

The Buggs Island (John H. Kerr) Dam was authorized by the Flood Control Act approved December 22, 1944 (Public Law 534, 78th Congress, 2d Session), to be located in the Roanoke River Basin in the southern part of Virginia and the northern part of North Carolina.

The damsite is located about 178.7 river miles above the mouth of the Roanoke River, about 20.3 river miles downstream from Clarksville, Va., and 18 river miles upstream from the Virginia-North Carolina boundary line.

The dam now occupies a narrow portion of the Roanoke River Valley where a closure between abutments was made by constructing a dam approximately 2,800 feet long. At this point the river flows in its channel over bedrock at an elevation of 198 feet above mean sea level and is flanked by narrow flood plains, the elevations of which are approximately 210 feet. The flood plains are composed of alluvial sand and silt and have a moderate growth of mixed hardwood trees.

The dam, a concrete structure 2,785 feet long with earthen saddle dikes increasing the total to 19,572 feet, has a maximum height of 144 feet and impounds a pool with a maximum depth of about 120 feet at the damsite and a maximum width of 2.3 miles. The maximum water level at the 320-foot contour forms a lake with a shore line of 850 miles. It extends upstream along the Roanoke a distance of 56 miles to Randolph, Va., and up the Dan River a distance of 34 miles to South Boston, Va., with arms extending from 7 to 20 miles up the valleys of the minor tributaries and storing 2,921,000 acre-feet of water. The reservoir inundates land in Mecklenburg, Halifax, and Charlotte Counties in Virginia, and in Granville, Vance, and Warren Counties in North Carolina. It is a multipurpose dam, serving as flood control, for manufacture of hydroelectric power, for low water regulation, for navigation, and for pollution abatement. Incidental benefits are recreational, and fish and wildlife preservation.

The normal annual rainfall for the Roanoke River Basin above the damsite is approximately 43 inches. It ranges from 41 inches at Roanoke, Va., to 60 inches at Randolph, Va., both of these extremes occurring in the western portion of the basin. It averages 44 inches at the damsite while the maximum annual rainfall, averaged over the basin, was 54 inches in 1937, and the minimum was 27 inches in 1930.

Moderate and extreme temperatures occur in the Roanoke River Basin. The highest temperature recorded in the basin was 107° at Weldon, N.C., and Danville, Va., and the lowest was −12° at Roanoke, Va.

GEOMORPHOLOGY

The Roanoke River rises on the eastern slopes of the Appalachian Mountains, flows in a southeasterly direction toward the Atlantic coast, and empties into Albemarle Sound approximately 7 miles below Plymouth, N.C. The principal tributary, the Dan, rises in Patrick County, Va., flows eastward through sections of North Carolina and joins the Roanoke River at Clarksville, Va., about 200 river miles above the mouth. The upper Roanoke River, between Altavista and Clarksville, Va., is known locally as the Staunton River and was named in memory of the wife of the late Governor of Virginia.

A small portion of the drainage basin lies in the rugged terrain of the Allegheny and Blue Ridge Mountains, and the larger and longer portion is confined to the Piedmont Plateau. The Plateau, a rolling to hilly country with elevations ranging from 300 to 900 feet above mean sea level, is traversed by highlands and cut by numerous tributary valleys. The flood plain along these two streams in the Piedmont Plateau ranges from 1,400 to 2,000 feet in width, while the river channel varies in width from 100 feet in the upper reaches to about 800 feet in the lower.

PHYSIOGRAPHIC ENVIRONMENT OF THE ROANOKE RIVER VALLEY

With Fenneman (1938, p. 9) as the authority, it has been stated that physiographically the Roanoke River valley lies in the mid-Atlantic part of the Atlantic Coastal Plain which "is often spoken of as the newer margin of the continent, a relatively recent addition to a growing mass."

Pleistocene terraces.—Throughout the Coastal Plain south of the glacial border, the surface is more or less terraced, and in the Southern States it forms a broader, straighter, and more continuous band than among the numerous estuaries around Chespeake Bay and represents intermittent or oscillating withdrawals of the sea. Underlying materials consist of poorly stratified and sometimes cross-bedded sheets of sand, gravel, and clay, with loam predominating on the surface.

On the other hand, Francis Langley (1917, p. 60) places the position of the dam and reservoir wholly within the Piedmont Plateau Province. He states:

> Beginning at the "Fall Line" and extending westward to the foot of the Blue Ridge is a belt of moderate elevations—300 to 700 feet above mean sea level. Relief is moderate and the general appearance is that of a moderately level region diversified with low-lying, well-rounded hills, and gently sloping valleys. The streams are fairly well graded and are not on the whole very swift-moving. The rocks are for the most part of Paleozoic and pre-Cambrian age, and are of both igneous and sedimentary origin. They have suffered intense dynamic metamorphism, which has changed them for the most part more or less completely into schists and gneisses. The region has long been deeply covered with a thick mantle of soil and more or less completely disintegrated and decomposed rock. The region is regarded as the stumps of an ancient range of mountains which have been worn away by long periods of weathering and erosion. This belt or province is known as the Piedmont Plateau.

GEOLOGY

The Piedmont Plateau is composed largely of granitic and metamorphic rocks with small areas of sedimentary rocks appearing in scattered localities. The oldest and most widespread of the rocks are pre-Cambrian metamorphic types that were originally sedimentary and igneous rocks of both intrusive and extrusive origin. During the Triassic Period large regional stresses were applied from the northwest and southeast causing the metamorphosis of the igneous and sedimentary rocks into gneisses and schists that strike from southwest to northeast. Accompanying the metamorphosis of the older rocks was the intrusion, at considerable depth, of magma, which cooled to form the even-grained granites and monzonites that are prevalent throughout the region. That the region was not much above sea level at this time is indicated by the fact that portions of the area have sandstone that originated below the water level. Late in the Triassic Period both the pre-Cambrian and early Triassic rocks were cut extensively by diabase and pegmatite dikes; these exist today as relatively small bodies with no great longitudinal extent. In Cretaceous times the entire area was reduced to sea level, and then raised above its present level where its dissection began.

Although erosional agents appear to be quite active in unprotected areas, the rate of erosion for the entire Piedmont region is below the rate of rock decomposition, as evidenced by the heavy mantle of residual soil that occurs throughout the region.

The dam is located at a point on the Roanoke River where a mature valley has been eroded from a formation known as the Red Oak Granite, and where relatively small depths of soil exist on the river bottom and valley walls. Long ridges extend from the upper valley walls to high ground east and west of the damsite. The ridges are composed almost entirely of residual soil and decomposed rock, with sound rock present at considerable depth.

The Red Oak Granite formation, within which the entire damsite is located, is classed petrographically as a biotite-quartz monzonite. However, the rock has many variations that have been observed throughout the reservoir area. Facies of the rock have been examined with variations from granite through a strongly banded biotite gneiss to a heavily contorted schistose structure. One small locality near the western end of the left-wing dike is underlain by a light-green hornblendic to chloritic gneiss that has been weathered and fractured to depths in excess of 100 feet.

TOPOGRAPHY

The John H. Kerr Reservoir area lies wholly within the Piedmont Plateau, and presents the topographic features common to that physiographic province. The topography is mature, the hills well rounded, and relief is much subdued. In fact, there is little relief noticeable to the casual observer, except where streams cut through the Virginina ridge, a low-lying, nearly flat-topped ridge with very gentle slopes, which forms the most prominent surface feature of the district. The most marked relief is along the Dan River, which crosses the district near its center. This stream crosses the rocks approximately at right angles to the strike of the schistosity, and, where it cuts through the Virginina ridge, the slopes are steep and the topography is rather rugged. The remainder of the district is without prominent relief, but is decidedly hilly.

DRAINAGE

The Dan River flows in a southeasterly direction across the center of the district. Within the area the Dan is joined from the north by the Banister and Roanoke Rivers, and from the south by the Hyco River and Aarons Creek. The Roanoke receives Horsepen Creek from the east, and Difficult Creek from the west, while Hyco receives Blue Wing and Mayo Creeks from the east. These make up the principal streams, but rainfall during certain portions of the year is very heavy and smaller streams are numerous. The larger streams, especially Dan and Roanoke Rivers, hold their course regardless of the character of the underlying rocks, but the creeks and smaller streams are greatly influenced, if not controlled, by it. Rainfall, especially during the winter and spring months, is heavy, and for the most part the district is well watered.

SOIL

The character of the soil depends upon the nature of the underlying rock. The tuffs and other volcanic material produce a lean, shallow soil; the granite produces a strong, rather sandy soil; and the other igneous rocks break down into rather sticky but fairly strong soil. Of all the truly igneous rocks, the diabase produces the leanest and least desirable soil. The volcano-sedentary rocks—the greenstone and sericite schists—as a rule form a lean and shallow soil. Rock outcroppings are not numerous except along stream courses, but almost invariably the partially decayed rock is very near the surface. Such soil is generally lean and does not produce good crops except when heavily fertilized. The granite is invariably deeply decayed, and produces the most fertile soils in the district. When properly cared for and well cultivated, the granite soils yield bountiful crops, and the most prosperous farms in the district are either in the rich alluvial lands along the rivers or in the granite area.

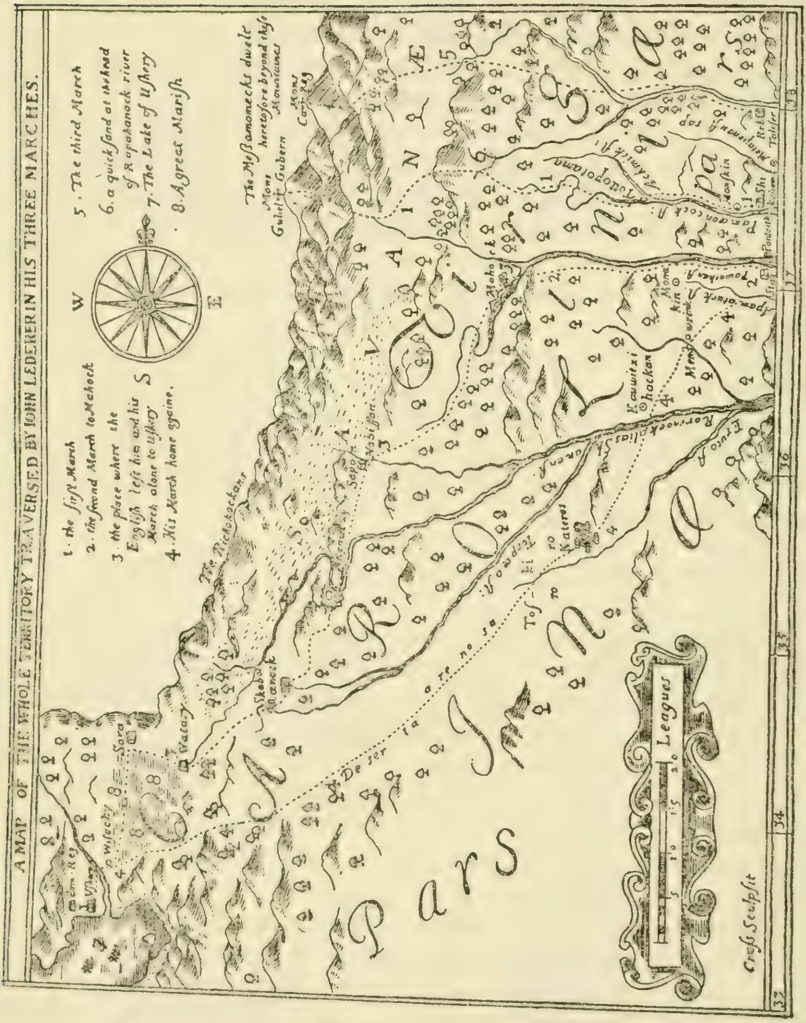
Much of the district is still in forest, but the greater part of the good timber has been cut off so that what remains is either culled forest or "old field" pine. The original timber consisted largely of oak and other hardwoods with a moderate amount of yellow pine. The present timber, while for the most part second class and small, is ample for mining needs and for fuel.

HISTORICAL AND ETHNOLOGICAL ASPECT

One of the prime reasons for the archeological reconnaissance of the John H. Kerr Reservoir Basin was to confirm, if possible, the tentative identification of one of the sites on Occaneechi Island as that belonging to the Occaneechi tribe, which was visited by John Lederer in 1670 (map 2) (Alvord and Bidgood, 1912). The Occaneechi were reported to have occupied an island in the Roanoke River in Virginia, presumably the one which bore their name, during the latter part of the 17th century (Mooney, 1894; Byrd, 1929; Swanton, 1922, 1946, 1952; Alvord and Bidgood, 1912).

Since considerable interest has been shown by local organizations, historians, and archeologists in the location of this particular Occaneechi village, it was decided that if its location could be positively identified, then a definite line of departure, positive dating, could be established for certain culturally affinitive material found within the area. This would give us an established point of departure from which to work backward in determining the relative age of similar remains, not only within the reservoir limits itself but from the surrounding areas as well.

It has been said that the Piedmont section of Virginia and North Carolina was claimed by a number of tribes that have since been


A MAP OF THE WHOLE TERRITORY TRAVERSED BY JOHN LEDERER IN HIS THREE MARCHES.
1. the first March
2. the second March to Mehock
3. the place where the English left him and his March alone to Ushery
4. His March home againe.
5. The third March
6. a quick sand at the head of Rapahanock river
7. The Lake of Ushery
8. A great Marish
W
S
E
The Messamomecks dwelt heretofore beyond these Mountaines
Mons Gulielmi Gubern
Mons Carol Reg
The Rickohockans
Watary
Sara
Wisacky
Ushery
Skahanock
Sapon
Nahissan
Akenatzy
Mahock
Katearas
Kawitzi hackan
Menoaock
Rorenock alias Sharantow
Tosknoso
Deserta arenosa
Ervoca
Pamaonock
Pars Carolinae
Pars Virginiae
Leagues
Cross Sculpsit
34
35
36
37

Map 2.—Facsimile of John Lederer's map.

tentatively identified as probably belonging to the Algonquian linguistic stock (Miller, 1957), which comprises the Hassinunga, Manahoac, Ontponea, Shackaconia, Stegarakes, Tenxnitanic, Tegninatee, and Whonkenti, all of which constituted the Manahoac Confederacy (Douglas, 1933) and were supposed to have occupied that section of northern Virginia from the fall line of the rivers to the mountains, and from the Potomac south to the North Anna River just north of Charlottesville. The Masisinicac, Mowenicho or Mohemencho, Monacan, Monahassano, and the Monasiccapano constituted the Monacan Confederacy and they were reported to have occupied the upper valley of the James River and its tributaries from the Falls west to the Blue Ridge Mountains; while the Nahyssans, the Tutelo, or Totero as they were earlier called, the Saponi, and the Occaneechi occupied roughly the southern section of the State.

1608.—This southern group was first contacted by a small party of Jamestown colonists in the fall of 1608 when a party led by Captain Newport ascended the James River to the Falls. Here they left their boats and traveled overland westward "into the land called the Monscome 'Monacan' " (Bushnell, 1920, p. 122).

1609.—In 1609 Capt. John Smith (1624) first mentioned the Tutelo, under the names of Monacan and Mannahoac, as occupying the upper waters of the James and Rappahannock Rivers. They were rather barbarous in nature and their economy was a food-gathering-hunting one.

1650.—The Occaneechi were first reported in 1650 by Bland (1911) while exploring the Roanoke River in the vicinity of the Falls. His "Appamatuck" Indian guide told him that farther up the Blandina River—

> about three days journey further to the South West there was a far greater Branch so broad that a man could hardly see over it, and bended it selfe to the Northward above the head of the James River unto the foot of the great Mountains, on which river there lived many people upwards, being the Occanacheans and the Nessoneicks, and that where some of the Occanacheans lived, there is an island within the river three days journy about, which is very rich and fertile soile, and that the upper end of the Island is fordable, not above knee deepe, of a stone bottome, running very swift, and on the other side very deepe and navigable. [Alvord and Bidgood, 1912, p. 126.]

Speck (1935, pp. 211–212) in speaking about the Occaneechi stated that:

> It is undoubtedly, as Mooney has shown, the designation of a Siouan-speaking tribe affiliated with the Saponi and Tutelo. *Yet we have no linguistic proof of such an affinity beyond the statement that their languages were similar* [writer's italics], which is supported by testimony given to Hale by Nikonha, the Tutelo (Hale, 1883, p. 10). Nor is it possible to add anything to its meaning or history from Catawba sources. Its connections were, however, definitely with the northern Siouan tribes with whom they finally combined. Bland (1911, p. 16)

writes of the Occanacheans and the Nessoneicks (which I have already noted as synonym for Nahissan) as living together on a branch of the Roanoke.

1654–56.—Lederer mentioned that the English settlers fought a battle with the Saponi leagued with the Iroquois in 1654–56. He positively identified the Saponi in 1670 when he stopped for a few days at the village of Sapon. It seems, at this time, that the Saponi and Tutelo were living together in a loose confederacy. In 1654–56 the Manahoac and Nahyssan were driven south by the Susquehanna. These two tribes then attempted to settle in the vicinity of the Falls on the James River. This alarmed the English settlers, who, with their Indian allies, attempted to discourage this group from settling there (Bushnell, 1930, p. 402). In the ensuing battle the English, together with their allies, suffered defeat, and the newcomers decided to move west and settle among the Saponi where they were found by Lederer in 1670. Batts and Fallam (Alvord and Bidgood, 1912), visited them in 1671. In 1676, or thereabouts, these tribes were supposed to have moved southeast to islands at the confluence of the Dan and Roanoke Rivers.

Lederer mentions the Akenatzy (Occaneechi) and their two-facedness while visiting them in 1670. It was during his visit that six strange Indians, treating for peace, met their death as they were feasted by the treacherous Occaneechi. Lederer, astonished by their actions, began to fear for his life and escaped the island the following day.

In 1676 a portion of the Susquehanna (Conestoga), having been driven from their home by a combined force of Iroquois and English settlers of Maryland and Virginia, joined the Occaneechi. Not satisfied to settle peacefully on the island with the Occaneechi, the Susquehanna tried to dispose of their benefactors; this resulted in the Susquehanna's being driven out. In the meantime Thomas Bacon and his followers, hot on the trail of the marauding Susquehanna, made contact with them at Occaneechi Island (Wise, 1911). The Occaneechi then joined forces with the English and the two proceeded to whip the ungrateful Susquehanna. The English, ever covetous, then tried to loot their allies of their valuable furs which they had seen earlier in the day. Another skirmish followed that resulted in a draw on both sides: the English were unable to take the palisaded town; the Occaneechi lost 50 warriors, which was quite a blow to them.

Shortly after this struggle the Occaneechi were joined by remnants of the Saponi, Tutelo, Nahyssan, and Manahoac. Supposedly the Saponi were to have settled on the lower island in the series of islands at the confluence of the Dan and Roanoke Rivers; the other groups were to have settled on the upper island, while the Occaneechi occupied the middle island. Their combined strength did them little good, for the ever invading Iroquois compelled them to evacuate their strong position, causing them to migrate southward into North Carolina. The Occaneechi, as a group, settled on the Eno River, while the combined other groups settled on the Yadkin River where they were located by Lawson in 1701 (Lawson, 1714).

Sometime between 1701 and 1714 Governor Spotswood, of Virginia, moved all of them up to Fort Christanna, near where the present town of Gholsonville, Va., now stands (Bushnell, 1919, p. 28), to act as a buffer for the Tidewater Colonies against outside marauding groups.

After the treaty of peace was signed in 1722 between the Virginia tribes and the Iroquois most of the combined Tutelo, Saponi, and Occaneechi moved northward and joined the Iroquois.

William Byrd (1901, p. 245) reported that the Occaneechi, Manahoac, Saponi, Nahyssan, and Tutelo united in 1728 and adopted the name of Saponi, by which they were henceforth known.

Before 1744 they were reported to have settled at Shamokin, Pa. From there on their history is closely affiliated with that of the Iroquois and they no longer appeared as individual groups nor are they of any interest to this study.

Lederer stated that the Indians living in the southern part of Virginia, as he found them, were not the original occupants, who, he claimed, were the Tacci, alias Dogi, who became extinct, having been replaced by the later groups. These Tacci were a rude, simple folk with a hunting-food-gathering economy, ignorant of agriculture, who lived on raw flesh, fish, and the fruits and nuts which they could easily gather.

Later a group came in, presumably in a peaceful manner, and taught them how to plant and prepare corn. What the contributing factors were that led to the extermination of the Tacci cannot be stated, for these Indians were gone and the later groups were fairly well established by the time the white man had come to this country.

The Occaneechi, at the time of Lederer, Batts, and others, were a small group. This tribe, at one time, must have been large and widespread. This may be inferred from the fact that their language, as has been stated by Hale (1883, p. 12; Beverley, 1705)—

> became the general medium of communication for the people of different nationalities in their neighborhood. That they had some ceremonial observances of a peculiar and impressive cast seemed evident from the circumstances that the intrusive tribes adopted their language, and probably with it some of these observances, in performing their own religious rites. . . . The displacement was a gradual process, and the relations between the natives and the encroaching tribes were not always hostile as may be inferred not only from the adoption of the aboriginal speech as the general means of intercourse, but also from the terms of amity on which these tribes of diverse origin were found living together.

Their ranks were supplemented from time to time not only by rogues and outlaws from other groups but by remnants of other tribes who came to them for protection against their enemies. This fact accounts for their fierceness and treacherousness.

It was reported, much later, that this same group occupied a strategic and well-fortified position astride a trading path, one that formed a hindrance to the settlement of the interior of Virginia and North Carolina (map 3). With such advantages, the Occaneechi became rather prosperous and wealthy, according to standards of their day. However, this prosperity brought about their destruction and caused them to abandon their island fortress. The blending of cast-offs into their ranks and their ability to act in the capacity of middlemen in the trade of the area should have resulted in an amalgamative culture. This is more or less borne out by John Locke (Alvord and Bidgood, 1912, pp. 224–225) who stated—

> . . . ye iland where ye Occheneches are seated strongly fortified by nature and makes them soe insolent for they are but a handful of people, besides what vagabonds repaire to them it beeing a recptackle for rogues.

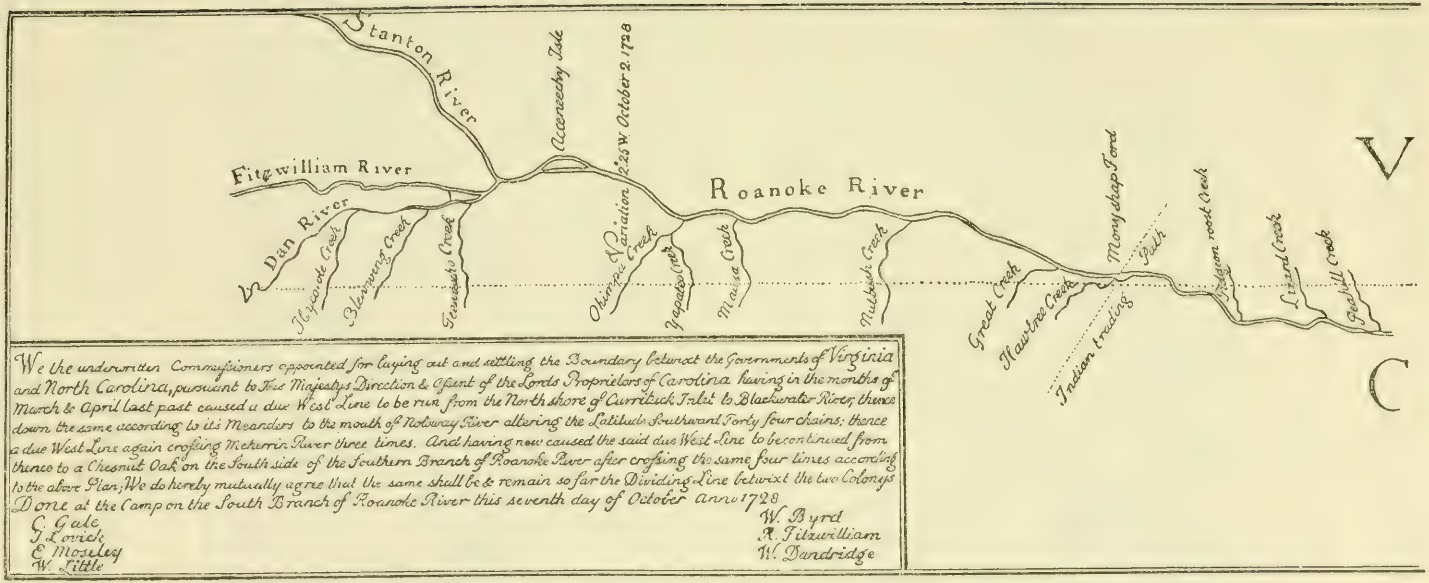
Apparently, just before the advent of the white man into the New World, a general movement and alinement of tribes and groups was taking place. This process was later accelerated by the arrival of the white man, which made conditions more acute as time went on. The white man, ever greedy for material wealth and bodily comfort, brought pressure to bear upon the larger groups, which in turn was reflected upon the smaller groups. This pushing of the smaller groups out of their old homes or bringing about their extinction added to the general turmoil.

Indian settlements in this section of Virginia were never very populous, as attested by the size and number of aboriginal remains found within a given area. This can possibly be explained by stating that the aborigines arrived early and general warfare was unknown or uncommon. There was room for everybody, which accounts for the scattered small settlements and communities.

Regarding their migration legend, Lederer said:

> The Indians now seated in these parts are none of those which the English removed from Virginia, but a people driven by an enemy from the Northwest, and invited to sit down here by an Oracle about four hundred years since, as they pretended; for the ancient inhabitants of Virginia (Tacci, alias Dogi), were far more rude and barbarous, feeding only on raw flesh and fish, until these taught them to plant corn, and shewed them the use of it.

Strachey (1849, p. 33), on the other hand, had been told by the Powhatan that they had been inhabitants below the falls of the James River for only about 300 years. Hawkes and Linton (1917, pp. 53–54) pointed out that the Lenape, according to their own statements, came into the Delaware Valley between 1387 and 1397. These statements,


V
C
Stanton River
Fitzwilliam River
Dan River
Hycoote Creek
Blewing Creek
Tewahokto Creek
Accoreechy Isle
Variation 2.25 W. October 2. 1728
Ohimpa Creek
Yapatco Creek
Maisa Creek
Roanoke River
Nutbush Creek
Great Creek
Hawtree Creek
Mony shap Ford
Indian trading Path
Pidgeon roost Creek
Lizard Creek
Peahill Creek

We the underwritten Commiſsioners appointed for laying out and settling the Boundary betwixt the Governments of Virginia and North Carolina, pursuant to His Majestys Direction & Aſsent of the Lords Proprietors of Carolina having in the months of March & April last past caused a due West Line to be run from the North shore of Curritück Inlet to Blackwater River, thence down the same according to it's Meanders to the mouth of Notoway River altering the Latitude Southward Forty four chains; thence a due West Line again croſsing Meherrin River three times. And having now caused the said due West Line to be continued from thence to a Chesnut Oak on the South side of the Southern Branch of Roanoke River after croſsing the same four times according to the above Plan; We do hereby mutually agree that the same shall be & remain so far the Dividing Line betwixt the two Colonys Done at the Camp on the South Branch of Roanoke River this seventh day of October Anno 1728

C. Gale
J. Lovick
E. Moseley
W. Little

W. Byrd
R. Fitzwilliam
W. Dandridge

Map 3.—William Byrd's map of the dividing line between Virginia and North Carolina.

all based on legendary lore, are interesting, for they would indicate that the historic groups were practically newcomers into this general area.

It has been said that the home of the eastern "Siouan" tribes was possibly Ohio; if this belief be true then they must have had to cross the Shenandoah Valley before entering the Piedmont, where they were said to have been established when first encountered by the English colonists. Why didn't they stop in the Valley west of the Blue Ridge Mountains where the land was rich and game plentiful? This can only be explained by the presence of the Iroquois and Delaware tribes who passed back and forth through this corridor causing less warlike groups to vacate the Shenandoah Valley and to seek safer homesites elsewhere. These facts were proved when the English negotiated a treaty at Lancaster, June 27, 1744. One of the Deputies of the Six Nations, Tachonoontia, reminded the English:

> All the World knows we conquered the several Nations living on the Sasquahanna, Cohongoronta, and on the Back of the Great Mountains in Virginia; the Conoy-uch-such-roona, Coch-new-was-roonan, Toha-riogh-roonan, and Connutshin-ough-roonaw, feel effect of our Conquest, being now a part of our Nations, and their lands at our Disposal. We know very well, it hath often been said by the Virginians, that the Great King of England, and the People of that Colony, conquered the Indians who lived there, but it is not true. [Colden, 1902, vol. 2, p. 149.]

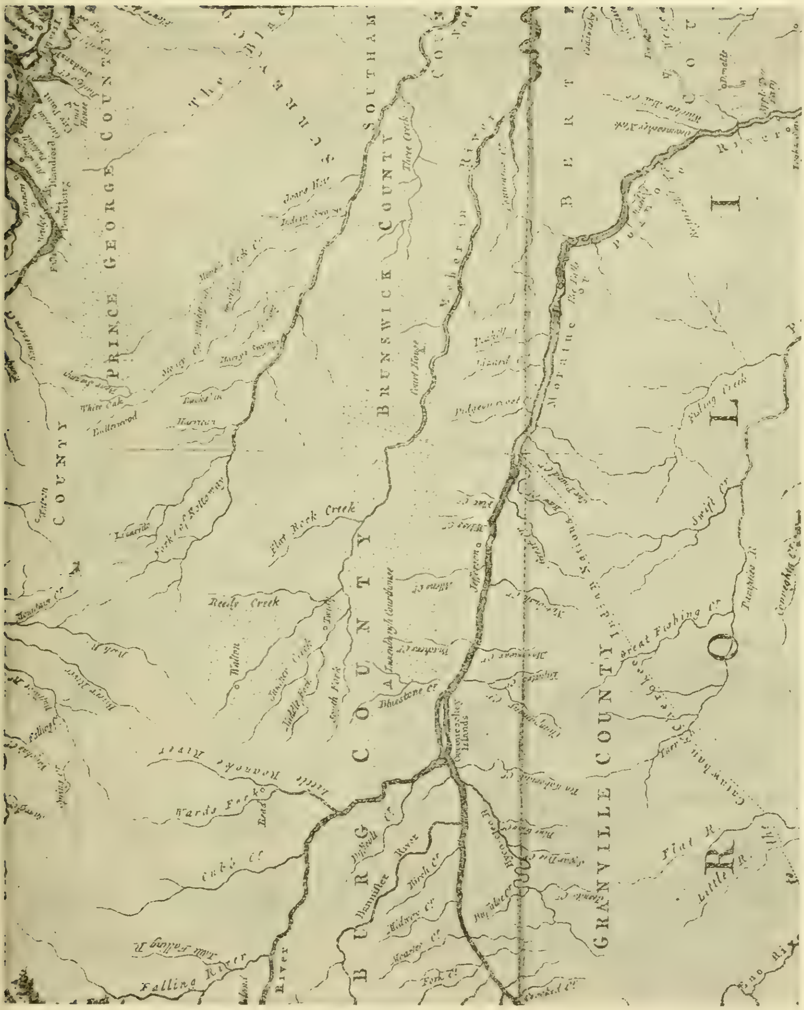
The following day one of the Commissioners replied:

> If the Six Nations have made any Conquest over Indians that may at any Time have lived on the West-side of the Great Mountains of Virginia, yet they never possessed any Lands there that we have ever heard of. *That Part was altogether deserted and free for any People to enter upon* [writer's italics] as the People of Virginia have done by Order of the Great King, very justly, as well by Ancient Right, as by its being freed from the possession of any other, and from any claim even of you the Six Nations, . . . [Colden, 1902, vol. 2, p. 160.]

This conquest of the Valley by the Six Nations that had taken place prior to the advent of the white man caused whatever Indian groups that were present either to migrate eastward where they were found in 1607 or to be assimilated by the Iroquois, as stated by Tachonoontia.

There is still another fact that should not be overlooked, namely, considerable portions of the area were not encumbered with people. Heckwelder (in Hawkes and Linton, 1916, p. 54) pointed this out as follows: "The seeming absence of prior occupants in the new country is again suggested by the Walum Olum, which refers to the newly discovered land as a 'land free from snakes (enemies), a rich land, a pleasant land.'" This absence of peoples becomes more apparent if one will only take the time to follow Lawson (1860) closely in his travels through the two Carolinas. He remarked that—

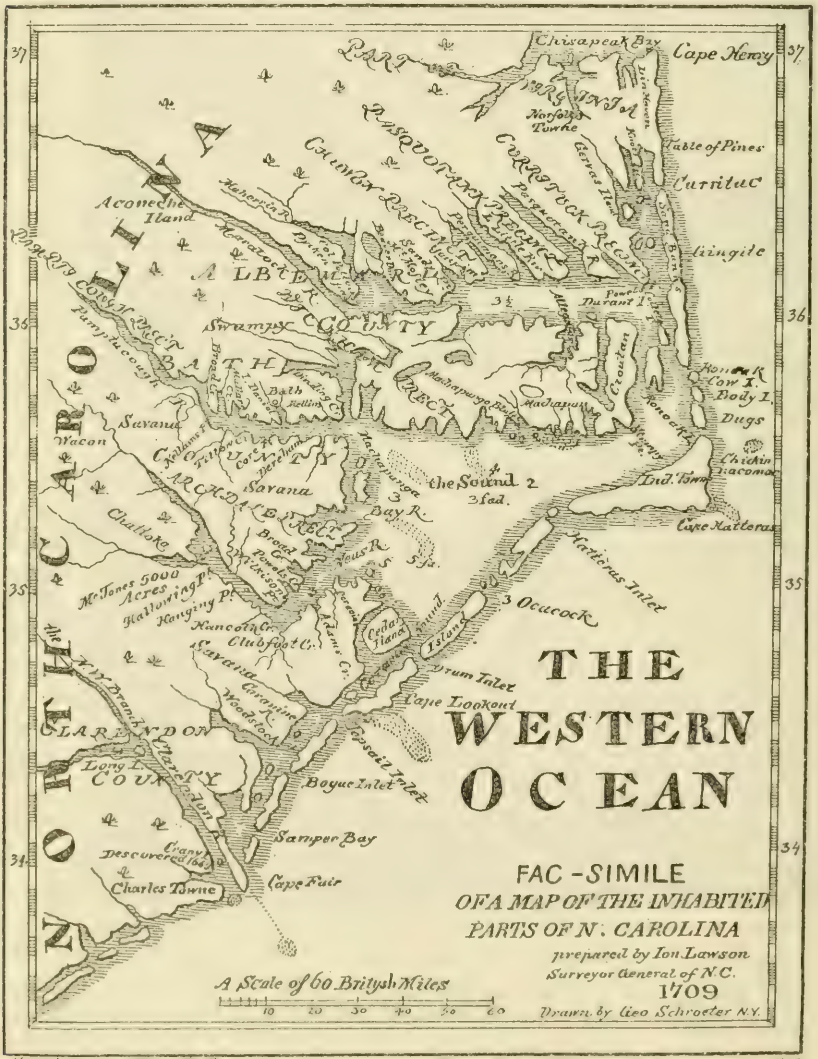
> . . . it must be confessed that the most noble and sweetest part of this country is not inhabited by any but savages; and a great deal of the richest part thereof


PRINCE GEORGE COUNTY
BRUNSWICK COUNTY
SOUTHAMPTON COUNTY
LUNENBURG
GRANVILLE COUNTY
BERTIE
COUNTY
Meherrin River
Flat Rock Creek
Reedy Creek
Little Roanoke River
Wards Fork
Falling River
Little Falling R.
Occoneachey Islands
Bluestone Cr.
Great Fishing Cr.
Swift Cr.
Flat R.
Little R.
Morattuc River
Fishing Creek
Cubb Cr.
River

MAP 4.—Fry's and Jefferson's map of 1775 (Jefferys Atlas, 1776, map No. 22) showing Indian trading path from Petersburg south to the Catawba territory crossing the Roanoke at the State line rather than in the vicinity of "Occoneachey Islands."

has no inhabitants but the beasts of the wilderness; for the Indians are not inclinable to settle on the richest land because the timbers are too large for them to cut down, and too much burdened with wood for their laborers to make plantations of.

Recently, a search through old atlases was made to gather information regarding the old "Trading Path of the Occaneechi." Jefferys (Jeffrys) in "The American Atlas or a Geographical Description of the Whole Continent of America, etc., 1775," gave some very interesting information. On a map drawn by Joshua Fry and Peter Jeffer-


Chisapeak Bay
Cape Henry
Part of Virginia
Norfolk Towne
Table of Pines
Curritue
Pasquotank Precinct
Currituck Precinct
Chowan Precinct
Aconeche Iland
Albemarle County
Swampy Bath County
Bath
Roanoak
Croutan
Cow I.
Body I.
Dugs
Chickinacomac
Ind. Town
Cape Hatteras
Hatteras Inlet
the Sound
Ocacock
Savana
Wacon
Chattoka
Archdale Precinct
Neus R.
Cedar Island
Drum Inlet
Cape Lookout
Topsail Inlet
Boque Inlet
Samper Bay
Cape Fair
Charles Towne
Clarendon County
Long I.
North Carolina
Mr. Jones 5000 Acres
Hallowing P.
Hanging P.
THE WESTERN OCEAN
A Scale of 60 Britysh Miles
10 20 30 40 50 60
37
36
35
34

FAC-SIMILE
OF A MAP OF THE INHABITED
PARTS OF N: CAROLINA
prepared by Jon Lawson
Surveyor General of N.C.
1709
Drawn by Geo Schroeter N.Y.

Hawks' History of N.C. Vol II

Printed by C. Fatzer. 216 William St. N.Y.

Map 5.—John Lawson's map of 1709 indicating "Aconeche Island" on the Maratock River. (From Hawks' History of North Carolina, 1858.)

son, dated 1775, a portion of which is shown in map 4, the trading path is distinctly shown approximately 36 miles to the east of the islands at the confluence of the Staunton and Dan Rivers, crossing just above the falls in the Roanoke River in the vicinity of "Charles" and "Beverley" islands, as noted by Bland (Alvord and Bidgood, 1912, p. 24), and it continued southward and north of "Akonichi" on the Eno River, which was located to the east of "Old Haw Fields." On this same map there is an "Occaneachey Neck" about 30 miles to the east of the crossing at the confluence of Wheelers Mill Creek. This "Akonichi" on the Eno River is probably the location of the Occaneechi as indicated by Lawson in 1701 (in Jefferys, 1775).

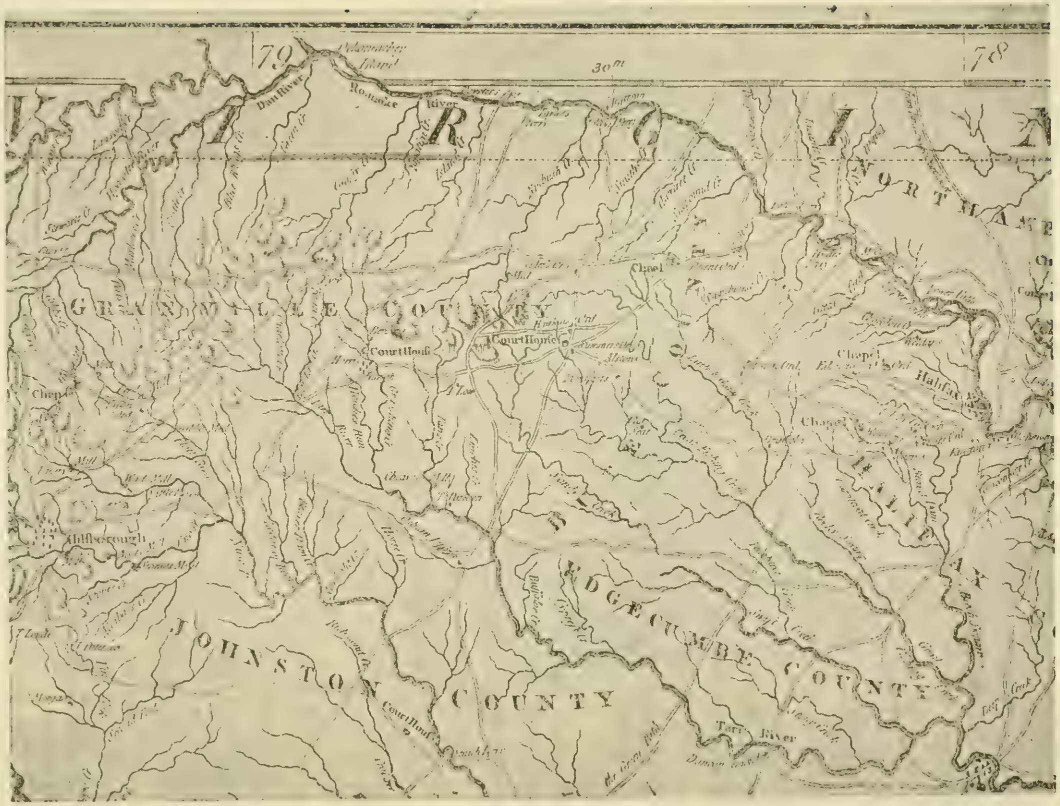
Swanton (1922, pl. 3) shows a map (map 5) giving the distribution of the Indian tribes in the Southeast about the year 1715. To the south of the North Carolina-Virginia boundary line, on the Moratock River, there is located quite a large island labeled "Aconiche I." Swanton's map is a facsimile of John Lawson's map of 1709 and was redrawn from a blueprint of the original in the British Archives. This map was used by Hawkes and Linton, and our second map (map 6) in Jefferys Atlas, drawn by "Henry Mouzon and Others," dated 1775, showing the "Roads and Indian Paths from Actual Surveys," does not depict any path or road in the immediate vicinity of the "Ocheneachey Islands" that is shown in its relationship to the confluence of two rivers.

Thomas Hutchins (1904) on his map dated 1778 does not show Occaneechi Islands or any road or path in the immediate vicinity of the location of the islands. He does portray a road crossing the Staunton River in the vicinity of Salem, Va., running southward and ending up on the Dan River in the vicinity of Martinsville, Va.

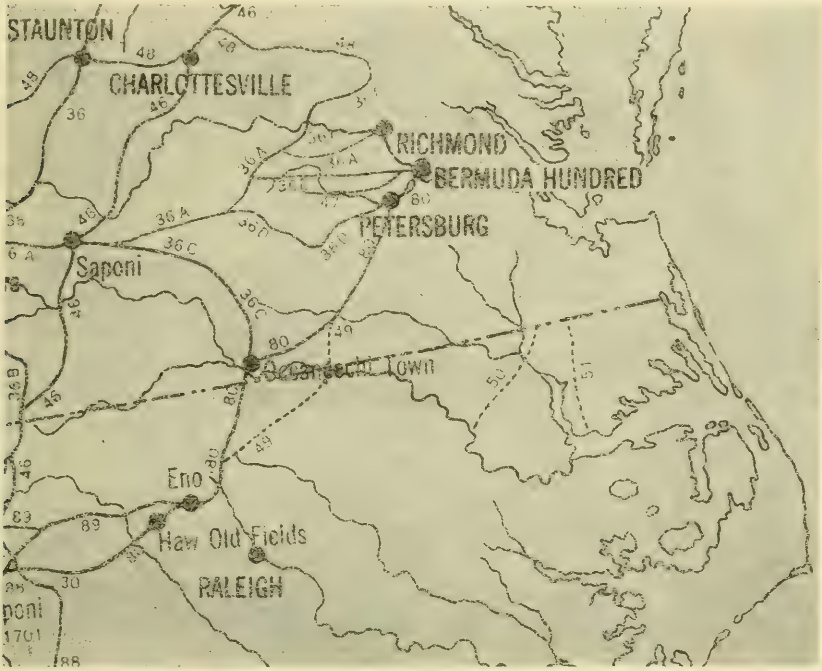
Myer (1928, p. 775) made an extensive study of the old Indian trail systems of the Southeastern United States during the Colonial Period and placed the Occaneechi Trading Path in the vicinity of the great falls of the Roanoke River, 36 miles below the confluence of the two rivers (map 7). He said:

> This trail led from Bermuda Hundred on the James River and old Fort Henry (later Petersburg), Virginia, southwestardly to the important Indian trading town of the Occaneechi on Roanoke River, *where it crossed the present line between Virginia and North Carolina* [writer's italics]. Thence it passed on to the Catawba, Cherokee, and other tribes in southwestern North Carolina and northwestern South Carolina and from the Catawba via the Congaree post to the site of the present Augusta, Georgia, where it connected with other trails leading to various sections of the Southeast. Its entire length was somewhat over 500 miles.

Swanton, in editing Myer's report, probably altered the map to show that the trading path was in the vicinity of the islands at the confluence of the Staunton (Roanoke) and Dan Rivers and that the


79
30m
78
Ockoneachey Island
Dan River
Roanoke River
VIRGINIA
NORTHAMPTON
GRANVILLE COUNTY
Court House
Chapel
Halifax
HALIFAX
BUTE
EDGECUMBE COUNTY
JOHNSTON COUNTY
Hillsborough
Buffaloe Cr.
Tarr River
Court House

Map 6.—Henry Mouzon's map, showing roads and Indian paths. No path or road crosses the Roanoke River in the vicinity of "Ockoneachey Island." (From Jefferys Atlas, 1776, map No. 23.)



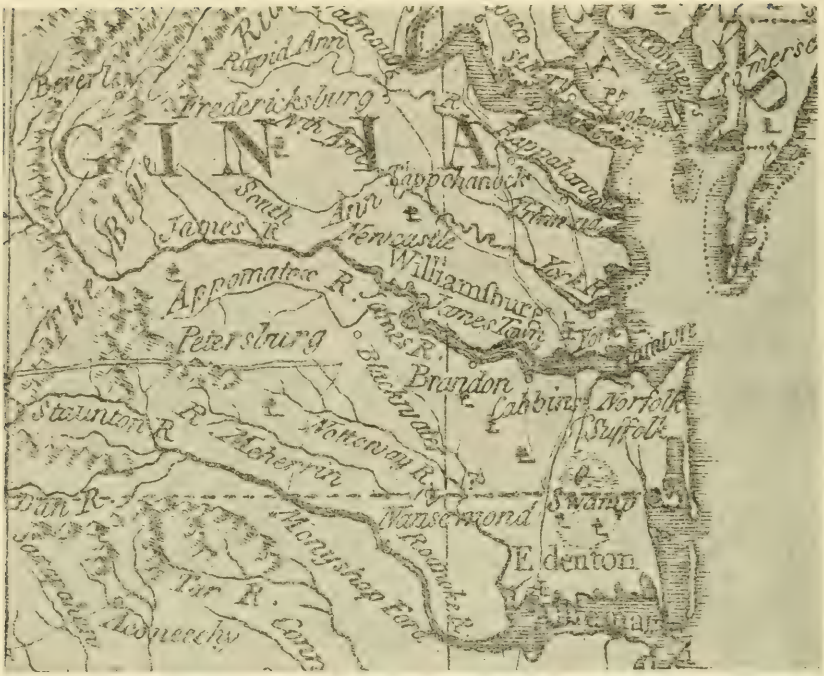
Map 7.—Myer's map (after Swanton, 1928), showing Indian trails from Petersburg southward to the Catawba territory.

crossing in the vicinity of the great falls of the Roanoke was an alternate route.

Upon examining the literature dealing with the route of the Trading Path from Petersburg, Va., down through North Carolina, it is especially noticeable that most of the later writers assumed, or took for granted, that Batts and Fallam were referring to a path that passed through the islands located at the confluence of the Staunton and Dan Rivers. This assumption is untenable insofar as a study of some of the early maps (Jefferys map of 1776), as previously indicated, portrayed the path crossing the Roanoke River in the vicinity of the great falls where a number of islands occur adjacent to Haw Creek, and, as Meyer pointed out, "where it crossed the present line between Virginia and North Carolina" (see map 8).

Bland (Alvord and Bidgood, 1912, p. 126) had this to say about these islands:

> At the foot of these falls also lies two Islands in a great Bay, the uppermost whereof Mr. Bland named Charles Island, and the Lowermost Captaine Wood named Berkeley Island: . . . Charles Island is three miles broad, and four miles long, and Berkeley Island almost as big, both in manner impregnable by nature, being fortified with high clefts of Rocky Stone, and hardly passable, . . . that that branch of Blandina River ran a great way up into the


Rapid Ann
Beverley
Fredericksburg
G I N I A
Rappahanock
South Anna
James R.
Newcastle
Williamsburg
York R.
Appomatox R.
James Town
Petersburg
James R.
Blackwater
Brandon
Cabbins
Norfolk
Suffolk
Staunton R.
Nottoway R.
Meherrin
Dan R.
Nansemond
Swamp
Moneyskeep Ford
Roanoke R.
Edenton
Tar R.
Adonecchy

Map 8.—Jefferys map No. 5 (Jefferys Atlas, 1776), showing Indian trail leading southward from Petersburg across the Roanoke River at the State line and into the Catawba territory.

> Country; and that about three days journey farther to the South West, there was a far greater Branch so broad that a man could hardly see over it, and bended itselfe to the Northward above the head of James River where lived many people upwards, being the Occanacheans and Nessonecks, and that where some of the Occonacheans lived, there is an island within the River three dayes journy about, which is very rich and fertile soile, and that the upper end of the Island is fordable, not above knee deepe, of a stony bottome, running very swift, and the other side very deep and navigable.

It will be noted that only some of the Occaneechi lived on the island in the river.

Alvord and Bidgood (1912, footnote p. 124) states that:

> From 1673 and perhaps earlier the Occaneechee fortified themselves in the one island Bland calls Berkeley Island and by reason of their strategic and secure location were able to offer great annoyance to the fur trade which passed along the Great Trading Path into Carolina piedmont, crossing their island.

This statement, in itself, would place the Occaneechi and the Great Trading Path well below the confluence of the Dan and Staunton Rivers, and from it we can well assume that the Occaneechi village never existed within the confines of the John H. Kerr (Buggs Island) Reservoir area.

SURVEY REPORT

The survey was conducted either on foot or with the aid of a jeep; thus it was possible to visit all sections of the reservoir area. Recent aerial maps furnished by the U.S. Corps of Engineers were used during the survey and were of supreme value in that they designated heavily wooded sections wherein survey was next to impossible.

The survey of the John H. Kerr Reservoir area and its immediate environs disclosed 94 sites of archeological and historical importance. The archeological sites consisted of 34 village areas, 3 Paleo-American campsites, 14 Neo-Indian campsites, and 41 flint workshops. The historical sites consisted of two areas from which quantities of scrap iron, clinkers, and discarded iron objects and tools were recovered. The two historical sites are assignable to the colonial period when large plantations were in existence. The majority of these sites are situated within the reservoir area while eight of them fringed the basin. These impinging sites consisted of 5 campsites, 1 village site, and 2 flint workshops. Only 86 sites were directly affected by the flooding of the reservoir, while the 8 others were indirectly influenced by this condition.

Wherever possible, a representative collection of artifacts was gathered from the surface of each site. These collections were later studied in an attempt to determine the relative cultural-age linkage.

SITE DESCRIPTIONS

MECKLENBURG COUNTY, VA.

Site 44Mc1.[2]—A short distance below the damsite on the north bank of the Roanoke River, 78°17′54″ longitude, 36°36′17″ latitude, in the Boydton Magisterial District, is located a small village site. This site was destroyed by the borrow pit from which the soil was taken to build the lateral dykes to the dam. When it was visited the ground was frozen, so no test pits were sunk into the site.

Although a number of sherds, a pottery discoidal made from a sherd, and a few stone chips were recovered from the surface, it was found that all sherds were unpainted, contained sand temper, with surface treatments consisting of cord-wrapped stick (fabric-marked), cord-wrapped paddle, textile impressed, combed, and what looked to be simple-stamped. Only one very small sherd was decorated with a fragment of an incised decoration of some sort, but the sherd was much too small to distinguish what the decorative motif actually was.

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[2] Site designations used here are trinomial in character consisting of symbols for State, county, and site. The State is indicated by the first two numbers, according to the numerical position of the State name in an alphabetical list of the United States; thus, for example, 44 designates Virginia and 31 North Carolina. Counties are designated by a two-letter abbreviation; for example, Mc refers to Mecklenburg, Ha to Halifax, etc. The final number refers to the specific site within the indicated State and county; thus, 44Mc1 indicates the No. 1 site in Mecklenburg County, Virginia.

Site 44Mc2.—This village site, located in an old cornfield on the north bank of the Roanoke River, 78°18′0″ longitude, 36°34′35″ latitude, was in the Boydton Magisterial District. The cultural material was widely scattered, the deposit being densest at the western end of the site. Sherds similar to those recovered from 44Mc1 were found at this site.

Site 44Mc3.—In an old cornfield in the Boydton Magisterial District on the north bank of the Roanoke River, 78°22′08″ longitude, 36°35′03″ latitude, were the remains of an old village site. The ground was frozen when this site was visited, and no testing was performed. A surface collection was made consisting of sherds, projectile types, a few briquettes, and a fragment of a long bone belonging to deer. Examination showed that all sherds were sand tempered and most of the exterior surfaces were either fabric marked, textile impressed, cord-wrapped paddle, or simple stamped. The greatest concentration of the sherds and other debris lay at the upper end or western section of the site.

Site 44Mc4.—At 78°33′42″ longitude, 36°35′16″ latitude, where Easter Creek enters the Roanoke River, is a village site on the northern bank of the Roanoke River, in Boydton Magisterial District. This site is about 500 feet long and 50 feet wide. At the time of visitation the ground was frozen over and hence was not treated to a series of test pits. From the surface a collection of the various cultural remains was made, consisting of potsherds, projectile points, and a crudely chipped chert celt. Again, as in other sites, the greatest concentration of cultural debris lay on the upriver side of the site.

Site 44Mc5.—A village site lying 2,700 feet west of 44Mc4, located at 78°23′17″ longitude, 36°35′22″ latitude in the Boydton Magisterial District is 60 feet long and 50 feet wide and situated 100 feet from the north bank of the Roanoke River in a wooded plot. Potsherds, steatite potsherds, nutting stones, and a crude basin-shaped metate were noted on the surface. The metate, slightly oval in outline, measured 20 inches in length, 14 inches in width, and 4 inches in greatest thickness. The worn surface was slightly concave and sunk about 1¼ inches into the stone itself. No evidence of any mano, or handstone, was noted from the site. Metates, or grinding stones, were very scarce and appeared to be atypical of the overall cultural pattern of the valley.

Site 44Mc6.—A campsite at 78°23′56″ longitude, 36°35′15″ latitude lay on the north bank of the Roanoke River in the Boydton Magisterial District. The campsite, situated in a newly planted cornfield, was completely destroyed by deep and excessive plowing so that when tested all cultural remains were incorporated within the plowed zone. Throughout the plowed zone were fragments of rocks, chips of stone, and an occasional sherd. Surface indications were scattered for a distance of 50 feet in length and 25 feet in width. It is doubtful if the original campsite covered as great an area. The few sherds recovered resembled those gathered from sites listed earlier.

Site 44Mc7.—A village at 78°24′16″ longitude, 36°35′03″ latitude lay on the north bank of the Roanoke River above the 230-foot contour and is approximately 200 feet long by 100 feet wide. Here was found a greater concentration of potsherds, more than were found on any site previously noted. All were sand tempered and showed about the same exterior surface treatments (pl. 1).

Site 44Mc8.—A small village at 78°25′46″ longitude, 36°35′48″ latitude lay in an old cornfield on the north bank of the Roanoke River in the Boydton Magisterial District. Surface indications covered an area roughly 100 feet long by 75 feet wide. Upon testing we found very little cultural deposit. All was incorporated within the plowed zone which had scattered the material rather widely. One trough-shaped metate and a number of nutting stones were noted on the surface. These were not salvaged on account of their weight. Sherds, steatite potsherds, and projectile points were collected from the surface of the site.

Site 44Mc9.—On a narrow sandy knoll on the north bank of the Roanoke River in the Boydton Magisterial District, a small campsite, 100 feet long by 25 feet wide, was located at 78°26′32″ longitude, 36°35′43″ latitude. This site had been badly eroded and had suffered from high-water action during frequent freshets. Here a number of artifacts were recovered. No definite cultural zone was noted in the various test pits sunk into the site.

Site 44Mc10.—This village site lay 100 feet from the north bank of the Roanoke River and well into the wooded area. It had never been farmed, so scattering of artifacts and other cultural remains was practically negligible. It lay at 78°27′05″ longitude, 36°35′22′ latitude and measured approximately 500 feet long by 125 feet wide. It had been badly gouged by freshet action, but remnants still remained that indicated the original area occupied by the aboriginal inhabitants. The surface collection consisted of potsherds, steatite potsherds, projectile points, and a few stone artifacts (pl. 2).

Site 44Mc11.—Scattered sherds and projectile points were gathered from an area 200 feet long by 100 feet wide which lay in an open pasture. Its position was plotted at 78°28′16″ longitude, 36°34′31″ latitude on the map which lay on the north bank of the Roanoke River in the Boydton Magisterial District. All sherds were of the usual sand-tempered ware and exterior surface treatments corresponded to those located earlier. The site was not tested.

Site 44Mc12.—A flint workshop was located well outside of the confines of the John H. Kerr Reservoir and will not be damaged by construction or the existing lake. Its position is plotted at 78°28′50″

longitude, 36°35′46″ latitude and lies well up into the hills north of the Roanoke River in the Boydton Magisterial District. In a partially cultivated area were the remains of chipping and shaping stone artifacts. A number of crude spalls were scattered among the remains. A number of large quartz points, in all stages of completion, had been gathered by the farmer who owns the site, and the area is gone over periodically by the local collectors. It is reputed that occasionally burials had been plowed up during the course of cultivation and their locations pointed out by the owner. We found no evidence of any burials when the site was visited.

In the uncultivated portion of the site a number of test pits were made in the vicinity of piles of castoff rock, a position occupied by the burials located earlier. We found nothing, as the hillside proved much too rocky and we could get no depth. The whole hill appeared to be solid quartzite covered over with a light mantle of soil. The quartzite of the hill and that utilized by the aborigines in their chipping corresponded so one can easily see why this chipping station was established here.

Site 44Mc13.—A small campsite at 78°32′55″ longitude, 36°37′37″ latitude is located just to the right of the U.S. Highway 58 bridge over the Roanoke River as one leaves Clarksville, Mecklenburg County, Va. The site was first visited in the early part of March 1947, and again in April after a freshet. It was then found that the freshet had completely destroyed the site and that the few badly eroded sherds gathered earlier constituted the entire evidence of the existence of this site.

Site 44Mc14.—Upstream from site 44Mc13, to the north of the Southern Railways trestle, and extending northward to the mouth of Island Creek was the largest and most important site in the whole of the John H. Kerr Reservoir Basin. The site lies in the Clarksville Magisterial District at 78°33′08″ longitude, 36°38′09″ latitude and on the north bank of the Roanoke River across from Occaneechi Island.

A group of Indians, supposedly the Occaneechi, were reported, in 1650, to be living on an island, which was inferred to be this island at the confluence of the Dan and Staunton Rivers in the vicinity of present Clarksville, Va. John Lederer, a German trader, was reported to have visited them in 1670. Later this group was reported to be identified as belonging to the eastern branch of the Siouan (Hale, 1883; Mooney, 1894; and others), but recently this fact has been disproved (Miller, 1957). Since they were the traders of the area, and had had contact with the white man, it is important that any place which they were supposed to have occupied be investigated in order to gain full information regarding the late prehistoric and early historic time placement.

Earlier, one of the local collectors reported finding segments of white clay pipestems upon the surface of this site. In order to test the site several 6-foot square test pits were sunk into the site. In one of these pits the remains of an adult male, partly flexed, lying on his left side, with no burial offerings, was found just below the plow zone. Pit fill consisted of clean sand. Less than 4 feet to the northwest of this burial was the partially flexed remains of a small child, lying on its left side, with no burial offerings. Grave fill consisted of sterile sand. Faint outlines of both pits could be traced for a short distance, but gradually they blended perfectly with the surrounding sand so that point of origin could not be determined.

Site 44Mc15.—A small campsite, 50 feet long and 25 feet wide at 78°37′47″ longitude, 36°40′51″ latitude, lay in the Clarksville Magisterial District on the north bank of the Roanoke River in an old cornfield. This site was tested, and it was found that directly under the plow zone was a darkened layer 0.6 foot thick which contained an occasional potsherd, small bits of charcoal, and some stone chips. Seven sherds, all sand tempered, were recovered from this testing.

Site 44Mc16.—A small campsite in the Clarksville Magisterial District at 78°37′36″ longitude, 36°40′36″ latitude measured 75 feet in length and 25 feet in width and lay on the north bank of the the Roanoke River. The cultural remains had been widely scattered over the area through plowing action. A few sherds were recovered from the surface of the site.

Site 44Mc17.—This site, once a large village, had been badly eroded by the last two freshets to occur in the Roanoke River, i.e., those of 1946 and 1947. Large whirlpools must have played over the site, as several large cone-shaped pits were gouged out practically in the very middle of the occupational area. As a result, a large number of small and large sherds, together with numerous stone chips and bits of charcoal, were found strewn over the surface.

This site had long been known to the local collectors and it was kept under constant surveillance, particularly after each rainstorm or high water action. Practically all stone artifacts were removed by these collectors.

The site lay on the south side of the river, about a quarter of a mile upstream from the head of Occaneechi Island at 78°37′42″ longitude, 36°40′05″ latitude.

Site 44Mc18.—This village site lay on the south bank of the Roanoke River in the Clarksville Magisterial District at 78°37′38″ longitude, 36°40′02″ latitude. It was damaged somewhat during the 1940 freshet, at which time a gully was cut through the middle of the site leaving only the marginal remnants intact. When visited, it was overgrown with broomstraw, grasses of various types, and pine trees.

The site may have been a continuation of site 44Mc17, since the two are only 50 feet apart.

Site 44Mc19.—Farther upstream and on the south bank of the Roanoke River lay another village site in the Clarksville Magisterial District at 78°38′16″ longitude, 36°40′53″ latitude. A number of fragmentary mussel shells were seen on the surface, a feature not usual in the Roanoke River Basin. Sherds were not plentiful. A number of broken human bones had been plowed up from shallow graves. Testing failed to locate any of these graves, but it did show that there were about 18 inches of undisturbed cultural deposit intact below the plowed zone.

Site 44Mc20.—At the head of Oak Hill Island, was a small campsite 50 feet long by 25 feet wide. The site is in the Clarksville Magisterial District, Mecklenburg County, and is oriented at 78°38′41″ longitude, 36°41′44″ latitude. This site was pointed out by William Maxey, of Richmond, Va. No artifacts were recovered from this site. Joffre Coe, collecting for the University of North Carolina, stated that he recovered trade objects from this area, but none were found by the present survey party.

Site 44Mc21.—At the head of Fields Island, below Occaneechi Island, were the remains of a small village site in a wooded area locally known as the "Old Skipwith's melon patch." The area had been under cultivation for a number of years, but 20 or 30 years ago it was allowed to return to nature and was badly overgrown with thicket. This condition prevented collecting. Mr. Maxey identified the site and described how various freshets had denuded the area in times past. As a result of the big freshet of 1870, practically all the topsoil as well as the vegetal coverage were swept away, leaving only the base portion of the cultural deposit resting upon sterile red clay. After the waters subsided a few complete clay vessels, a number of projectile points, and some metal objects were picked up. Some of this material, at the present time, is in the Maxey Collection in Richmond, Va.

Once more river deposits and vegetation accumulated over the area only to be denuded again in 1940 when the entire island was affected. After the waters had subsided additional material was collected, but the whereabouts of it is unknown.

A number of the local collectors and some historians believe this island to be the site of the "lost" Occaneechi village. What they base their statement upon is not known to the writer.

Sites 44Mc22 and 44Mc23.—Two sites in the Boydton Magisterial District were located near the foot of Fields Island; one, 44Mc22, is a village site and the other, 44Mc23, is a campsite. Both are of very little archeological importance. The surfaces of both were well sprinkled with sherds, chips of stone, and a few projectile points. A crudely chipped stone celt was picked up from the surface of the village site.

Site 44Mc24.—A large number of stone chips, together with broken and chipped stones, were found scattered over the surface of a small knoll 375 feet long and 200 feet wide. Among these were a few crude projectile points made out of quartzite. No special type of projectile point or other stone artifact was found among the flint scrap of this workshop. The site, located in the Clarksville Magisterial District at 78°31′35″ longitude, 36°36′18″ latitude, had been planted to corn and showed that it had been cultivated for a long time.

Site 44Mc25.—This flint workshop, located in the Boydton Magisterial District at 78°17′27″ longitude, 36°35′15″ latitude, was on a low ridge at some distance from the river's edge. The surface was covered with stone chips, discarded and fragmentary projectile points, which covered an area roughtly 100 feet wide by 100 feet long. There was no depth to this deposit, for when tested all remains lay directly upon the surface.

Site 44Mc26.—On a knoll in an open field, located in the Boydton Magisterial District at 78°18′08″ longitude, 36°35′03″ latitude, rather far from the Roanoke River, were the remains of an old flint workshop that covered an area 50 feet long by about 50 feet wide. Quartzite chips, spalls, and crude fragmentary projectile points were found scattered over the surface. Testing showed that the deposit was very thin and overlay a deposit of sand, red clay, and rocks.

Site 44Mc27.—Another flint workshop in the Boydton Magisterial District at 78°17′12″ longitude, 36°34′38″ latitude was found covering an area 500 feet long and about 100 feet wide. Practically all the deposit consisted of quartzite chips and discards and was confined to the surface of the site. The site is of little archeological importance.

Site 44Mc28.—On top of a knoll above the 266-foot contour was a clear area which had formerly been farmed. In this field were numerous stone chips and a few projectile points. The site, located in the Boydton Magisterial District at 78°17′45″ longitude, 36°34′31″ latitude, had all the characteristics of being a prepottery site combined with a flint workshop. The location was such that the surrounding country could easily be seen for a considerable distance from the knoll.

The following sites in Mecklenburg County, Va., are listed as flint workshops: 44Mc29, 44Mc30, 44Mc32, 44Mc33, 44Mc34, 44Mc38, 44Mc40, 44Mc41, 44Mc42, 44Mc43, 44Mc44, 44Mc45, 44Mc46, 44Mc47, 44Mc48, 44Mc49, 44Mc50, 44Mc55, 44Mc56, 44Mc57, 44Mc58, 44Mc59, 44Mc65, 44Mc67, 44Mc68, 44Mc69, 44Mc70, 44Mc74, and 44Mc75. There is nothing outstanding about any of these sites since each is identical with the other, and they vary only in the number of stone chips and other stone debris that cover the area.

Site 44Mc31.—A small campsite in the Boydton Magisterial District at 78°17′32″ longitude, 36°33′28″ latitude, had been badly stirred up by plow action. There was no depth to the deposit, for directly under the plow zone lay undisturbed red clay. A few sand-tempered sherds and a few fragmentary projectile points were recovered from the surface.

Site 44Mc35.—In an old cornfield in the Boydton Magisterial District at 78°22′43″ longitude, 36°35′05″ latitude, was found a small campsite. The cultural deposit did not extend through the plow zone, and a few sand-tempered sherds as well as a few projectile points, were recovered from the surface of the site.

Site 44Mc36.—Within the Boydton Magisterial District at 78°21′58″ longitude, 36°34′47″ latitude was located a village site, 150 feet long by 100 feet wide, in an old cornfield that had been turned into a pasture. A number of sand-tempered sherds and some projectile points were gathered for study purposes.

Site 44Mc37.—A fairly large number of sand-tempered sherds and some flint artifacts were gathered from an old village site in the Boydton Magisterial District at 78°21′47″ longitude, 36°34′42″ latitude, that covered an area 150 feet long and 75 feet wide. This field was once planted in corn but had not been farmed for some time.

Site 44Mc39.—This village site in an old cornfield lay in the Boydton Magisterial District at 78°24′43″ longitude and 36°34′45″ latitude and covered an estimated area 50 feet long by 35 feet wide. Here a number of sand-tempered sherds, as well as a few projectile points, were gathered from the surface of the site. A series of test pits were sunk into the occupational area, and it was then found that the cultural deposit only extended 0.3 foot below the plow zone. Bits of charcoal, wood ash, and a few flint chips were scattered through this deposit.

Site 44Mc51.—A village site 150 feet long and 100 feet wide was situated in the Boydton Magisterial District at 78°28′16″ longitude, 36°34′13″ latitude. Apparently the cultural material covered a much larger area than that in which it was originally deposited, since there was no depth to the cultural debris and all of it was practically incorporated within the plow zone. The largest number of sherds recovered during the survey from any site within the reservoir basin came from this site.

Site 44Mc53.—On a primary levee of the south bank of the Roanoke River lay a small campsite 50 feet long by 35 feet wide that had been planted in corn. The soil was loose and sandy, and cultural evidence, scattered well over the entire area, consisted mostly of stone chips, broken stones, and an occasional sand-tempered sherd. Additional cultural material, in which were bits of charcoal and fire-burned stones, lay 0.7 foot below the plow zone, all of which rested directly upon sterile red clay.

Site 44Mc53.—This village site lay on the south bank of the Roanoke River and to the east of the mouth of Grassy Creek. It covers an area approximately 500 feet long and 200 feet wide. At the time of the survey the field was planted in wheat and no test pits were inserted into the site. From between the rows of wheat a number of sand-tempered potsherds, a few projectile points, and a section of an aboriginal pipestem were picked up.

Site 44Mc54.—On the side of a hill about 40 feet from Buckhorn Creek was a small camp area 93 feet long and 33 feet wide which lay in an old tobacco field. The cultural deposit, varying from 0.7 to 0.9 foot in depth, lay under the plow zone and contained sand-tempered sherds, bits of charcoal, as well as stone chips and broken stones. A small number of sherds and a few projectile points were recovered from testing.

Site 44Mc60.—In a freshly plowed field, in the Boydton Magisterial District 78°32′12″ longitude, 36°38′13″ latitude, was located a campsite about 80 feet long and 30 feet wide. A number of test pits were inserted into the occupational area which showed that the cultural deposit extended only 0.3 foot below the plow zone. The test pits also indicated that the surface manifestations far surpassed the extent of the original deposit, which approximates 47 feet in length by 20 feet in width. No great number of sherds were found at this camp.

Site 44Mc61.—On the south bank of the Dan River opposite the midpoint of Occaneechi Island in the Clarksville Magisterial District, 78°35′40″ longitude, 36°39′06″ latitude, lay a campsite approximately 100 feet long and 50 feet wide. A large number of stone chips of chert, quartz, quartzite, as well as jasper lay on the surface. Sherd material was very scarce.

Site 44Mc62.—In an old cornfield on a primary dike that was elevated well above the surrounding area in Clarksville Magisterial District at 78°37′17″ longitude, 36°39′52″ latitude was a village site 150 feet long and 50 feet wide. This area was tested and the cultural deposit was found to extend 1.2 feet under the present plow zone. A fairly large number of sherds, besides a few projectile points, were recovered from the site. All sherds were sand-tempered.

Site 44Mc63.—A short distance from site 44Mc62 on the south bank of the Dan River lay a rather large village site at 78°37′32″ longitude, 36°39′58″ latitude. Two outstanding things were noticeable at the time of the survey: (1) the site had not suffered from the action of the many freshets; and (2) local collectors and pot hunters apparently never found this site, as the surface was not molested. The western section had been planted in corn while the eastern section was allowed to revert to nature. Its proximity to the site at the head of Occaneechi Island (44Ha1) could have helped to settle various questions dealing with both early historic and late prehistoric phases of the so-called Siouan culture, but after a careful search of the surface and from rather extensive testing, nothing of this sort was found.

Site 44Mc64.—This village site was located on the south bank of the Dan River and east of the mouth of Aarons Creek in the Clarksville Magisterial District, 78°41′22″ longitude, 36°40′55″ latitude. This same position had been occupied by the Old Moon Ferry Landing. The ferry, which had been operated during the early stages of the Buffalo Lithia Springs, a health spa and pleasure resort, had been abandoned for a number of years, leaving practically no surface indications of its prior existence. Many of the local oldtimers in the immediate vicinity well remember when the ferry was in operation.

A large portion of the site had been under cultivation for years, and it was in this section that a number of test pits were inserted. A few pits were dug in the outlying uncultivated sections. Test pits in both sections showed that a very thin layer of cultural material still remained in the cultivated portion, which incorporated a number of sand-tempered sherds, but that the other sections were sterile of cultural indications.

Site 44Mc66.—A Paleo-American campsite, belonging to the eastern variant of the "Folsom" culture, lay on the north bank of the Roanoke River on the old Russell place, one of the early estates in the vicinity of Clarksville, Va. It was located within the Clarksville Magisterial District at 78°37′58″ longitude, 36°41′27″ latitude. Stone chips covered an area roughly 200 feet long by 150 feet wide, and the area lay at the base of low hills on a terrace adjacent to the river. A portion of the site extended above the 320-foot contour, which does not fall within the reservoir limits.

From the surface of the site several fluted points, snub-nosed scrapers, and gravers, comparable to those found at the Lindenmeier site in northern Colorado (Roberts, 1935 e, 1936 a, 1936 b, 1937 a, 1937 b, 1939 a), and a number of pentagonal points were recovered. Miller (1948) earlier indicated that these pentagonal points were directly associated with Eden type points and suggested that some sort of correlation existed. The site had been intensively eroded, and this had greatly reduced the cultural deposit so that all rested upon a sterile red clay pan.

Site 44Mc71.—Sometime during the early days when the white man occupied this section of the Roanoke valley, a number of iron workshops were established to the north of and in the vicinity of Clarksville, Va., and to the east of the Roanoke River in the Clarksville Magisterial District. At one of these sites, 78°37′48″ longitude, 36°41′07″ latitude, there was found, below the humus layer, a deposit containing fragments of worked iron, pieces of slag, chunks of charcoal and coal, and broken and burned stones. This deposit ranged in thickness from 0.8 to 1.5 feet and covered an area roughly 100 feet long and about equally as wide. It was found to rest upon clean sterile clay containing considerable marl.

Fragments of iron chisels resembling those found in modern blacksmith shops, square iron nails, fragments of hinges of various sorts, fragments of horse shoes, and castoff iron fragments seem to comprise the main part of the assemblage. Most of these articles are not diagnostic of any particular time, and since there is no apparent knowledge of their local origin it is almost impossible to place any time limitation upon them and the deposit. Originally one would associate them with the several large plantations that formerly existed here and with the movable blacksmith shops that were carted about the plantation as the need developed. Possibly the former owners did not think such activity warranted recording and hence all knowledge has passed on with those connected with it. A similar site was noted at 44Mc73.

Site 44Mc72.—On the Oak Hill Plantation east of Clarksville in the Clarksville Magisterial District at 78°37′45″ longitude, 36°40′54″ latitude was another Paleo-American campsite. A few fluted points, a number of snub-nosed scrapers, as well as a number of pentagonal points were recovered from the surface of the area. These pentagonal points (Elys Ford Points) received and demonstrated the same chipping technique as was used on the eastern variant of Folsom points. Some pentagonal points display a certain amount of fluting as shown in plates 3, *f*, *g*, *h*, *i*, and *j;* 4, *i*, *j*, and *k*. This fluting was accomplished by leaving a small striking platform projection at the base of the point that acted as a "pressure point" from which to direct the pressure in casting off the central flake or flakes to create the fluted effect. The flake had been cast off on one side but not on the reverse side. This is the first indication that such points were associated with the eastern Paleo-American tradition. Other types of artifacts were recovered from the testings, as well as from the surface (pls. 5–10).

Site 44Mc74.—On a knoll, well outside of the reservoir basin, west of U.S. Highway No. 14 at 78°37′42″ longitude, 36°41′34″ latitude, was a small flint workshop from which a number of Woodland type points were recovered. As the site was outside of the reservoir basin and in no danger of being inundated, it was surface-hunted but not tested. The only purpose of reporting this site was for the record so that other archeological surveys could note the location of the site in any possible Statewide archeological reconnaissance.

Site 44Mc75.—In the field adjoining site 44Mc66, at 78°37′38″ longitude, 36°41′16″ latitude, was still another flint workshop. This was possibly another Paleo-American campsite displaying considerable chert chippings as well as minor quantities of quartz and quartzite workings. Nodules of these same materials were seen on the surface of the site, from the sides of which flakes were cast off. A number of years ago this field was planted in tobacco but lately it has lain fallow (pl. 11).

Site 44Mc77.—One of the outstanding sites in Mecklenburg County, Va., lay outside of the reservoir area. It is located south of the bridge over the Roanoke River on U.S. Highway No. 1, on the west bank of the river. The village is situated on a terrace on Mr. B. R. Palmer's farm and covers an area roughly 250 feet in length and about 75 feet in width. A number of interesting artifacts have been recovered from this site by local pothunters and collectors who have sporadically dug into the site. Apparently no great harm has been done to the site, for it has been potted only in spots.

CHARLOTTE COUNTY, VA.

Site 44Ch1.—On the north bank of the Roanoke River, covering an area 300 feet long by 100 feet wide in the Clarksville Magisterial District at 78°38′58″ longitude, 36°41′58″ latitude, was a campsite of Paleo-American. Fluted projectile points were reportedly recovered from this site but none were found during the time of the survey. Old Abbeyville Mill, a well known local landmark, once occupied this site. It lies on the mainland across from the foot of Oak Hill Island. A great number of stone chips cover the surface of this site, but an occasional sand-tempered sherd or a Woodland projectile point was seen and recoverered during the survey.

Site 44Ch2.—At the foot of Harris Island in Clarksville Magisterial District at 78°39′00″ longitude, 36°41′52″ latitude was located a small campsite 50 feet long by 35 feet wide. Part of this area was included in a picnic area and part of it was in corn. The site lay opposite the channel mouth of Little River and the Roanoke River from the Abbeyville Mill site. Eastern variants of fluted points were reported to have been found here but none were found during the survey.

Site 44Ch3.—Midway down Harris Island in the Clarksville Magisterial District was another Archaic campsite at 78°39′27″ longitude, 36°42′15″ latitude, which was 35 feet long and 25 feet wide. This was just a small site and probably was not occupied very long. Practically all the cultural deposit was incorporated within the plowed zone, and only a few sand-tempered sherds were recovered from the surface of the site.

Site 44Ch4.—On two small knolls well above pool level of the reservoir lay two flint workshops in the Clarksville Magisterial District at 78°39′48″ longitude, 36°42′47″ latitude. The area was covered with quantities of quartz and quartzite workings, and after a search of the area was made we were able to salvage two fragmentary quartzite points which did not differ from similar artifacts found throughout the basin area.

Site 44Ch5.—On a small ridge 75 feet from the east bank of the Roanoke River at 78°40′24″ longitude, 36°43′28″ latitude in the Clarksville Magisterial District was a small village site 200 feet long by 50 feet wide. This site was rather low and surrounded by swamps, and during high water it was often completely inundated. The area was last planted in corn, but apparently the soil was too poor to produce a profitable crop or high water drowned out the corn, for it never matured. Although the field was not tested, a number of sand-tempered sherds were recovered.

HALIFAX COUNTY, VA.

Site 44Ha1.—At the head of Occaneechi Island were the remains of a village site that had been destroyed by various freshets of the Roanoke. The whole southern half of the site was gone when it was first visited by the Survey group, and the northern section consisted of 18 inches of clean river-deposited sand, loam, and humus superimposed over 24 inches of cultural material.

When the Survey party first visited the site the latter part of March 1947, they tied their boat to a large tree root on the edge of the island. Three weeks later, after a severe storm, the site was revisited, and all evidence of the tree root and 6 feet of the island had disappeared. This demonstrates the changing nature of the island. When one stops to consider how much this island's contour has changed in the past 250 years, one can readily account for all of the changes that must have taken place since the abandonment of the village by the Indians.

Local inhabitants tell how the talus of the island has grown some 200 feet within the past 50 to 60 years. Apparently there is some sort of river action that periodically destroys this talus and then rebuilds it, as the overall measurement of the island has varied but little.

A number of sand-tempered sherds and a small copper pendant were recovered from the surface of the island in the vicinity of the site. All were secondarily deposited by the river, and were out of context.

The metal pendant of copper may have been a trade object or it may have been of native manufacture. If it is of the white man's manufacture, it is the only evidence of his contact with the occupants of this site. Coming from the surface of the site does not mean that it was deposited upon the site by the aboriginal occupants, for it may have been carried in by local agencies and lost while there. No other evidence of any trade material from this site was found. None were reported by local collectors.

Dr. Charles Porter and Mr. H. Summerfield Day who conducted an earlier archeological reconnaissance by the National Park Service report this site in their study as Site I–4.

Site 44Ha2.—In the large cornfield just north-northwest of the uppermost large white barn on Occaneechi Island were the remains of a rather extensive village site (pl. 12). This site, at 78°34′44″ longitude, 36°38′24″ latitude, covered an area roughly 300 feet long by 150 feet wide wherein a number of test pits were inserted. These showed that there was a sterile deposit ranging from 12 to 17 inches in thickness which was superimposed over a cultural layer 6 to 15 inches in thickness. These test pits also showed that the cultural material had spread much too extensively since cultivation had taken place; this was aided by a certain amount of erosion which took place periodically because of unusually high water. After extensive testing, only a few sand-tempered sherds were recovered, mostly from the surface of the site, and only a few of these came from the Survey's actual testings.

It was reported that when the barns were erected, along with the siloes, a number of human burials were found. The workmen, not interested in the skeletal material, threw out the bones, and the pigs soon disposed of them by eating even the smallest scrap.

This site has been designated by Mr. Joffre Coe for the North Carolina's archeological reconnaissance as site Va 14 and by Dr. J. C. Harrington, of the National Park Service, as his No. 2 site.

Site 44Ha3.—In a newly planted rye field on one of the primary terraces of Occaneechi Island and facing the south bank of the Dan River, at 78°35′03″ longitude, 36°38′38″ latitude, and covering an area 75 feet long and 40 feet wide, was a campsite. The area was not tested, as we did not wish to destroy any of the crops present. A few sand-tempered sherds were recovered from the area.

Mr. Coe's designation for this site is Va 15; Harrington's designation is No. 3; while Porter-Day's designation is I–2.

Site 44Ha4.—Two and one-half miles up the island from the gate which opens onto Occaneechi Island, in an open area formerly occupied by an old sawmill, was a flint workshop. The area, mostly open sand, had a large number of quartz, chalcedony, and chert chips on the surface. No partially completed or finished forms were found. No cultural deposit was found, although two 6-foot square test pits were put down into the area. This deposit may indicate the result of freshet action, wherein heavy materials were washed into a small pocket.

Coe's designation for this area is Va 18; Harrington's designation is No. 6; Porter-Day's designation is I–3.

Site 44Ha5.—In the garden area east of the brick living quarters, which was located on the primary terrace along the south shore of Occaneechi Island, were the remains of a village site (pl. 13). Test pits showed that the first 10 inches contained nothing but modern white man's debris. Below this was a very thin layer not more than an inch thick in which a few aboriginal potsherds occurred in clean river sand. Immediately below this was a thin layer of clean river-deposited sand and beneath this was a 10-inch layer, slightly gray in color, that contained a number of sand-tempered sherds in association with wood ash and bits of charcoal. Below this for an indetermined depth was clean, sterile, river sand.

Coe's designation of this site was Va 13, while Harrington's list called this his No. 1 site.

Site 44Ha6.—About a mile from the entrance onto Occaneechi Island were the remains of the old Tollifero house. The foundations, chimney, and parts of the superstructure were still standing at the time of the survey and subsequent excavation. The dwelling stood upon the remains of an old village site. Testing showed that the area had never been cultivated and that a very shallow humus layer covered the Indian deposit. From the various tests and later excavation a number of sand-tempered sherds were recovered along with the usual manifestations of long habitation. This village probably occupied an area 250 feet long by about 85 feet wide.

Neither the University of North Carolina nor the various National Park Service surveys indicated the presence of this site.

Site 44Ha7.—Along the ridge of a narrow sandy primary terrace lay the remains of an old village site. The site was surrounded and overgrown by trees. It was pointed out to the writer by A. E. Keeton of Clarksville, Va.

Mr. Keeton reported that the site was dug into from time to time by local collectors, Troops of Boy Scouts, and from out of State pothunters. A number of "relics" were found and the "loot" widely dispersed. What was actually uncovered during these endeavors could not be determined, as no one really knew what had come from this site.

The site was badly pitted by freshet action and a few sand-tempered sherds were found scattered around these pits and in material from the various diggings inserted into the site.

Site 44Ha8.—Outside of the reservoir area and on a number of small adjacent knolls, which had been planted in tobacco, were the remains of a large flint workshop or prepottery site. Here a number of blades were found that resemble those usually associated with prepottery sites in North Carolina and Georgia. Most of the points were either quartzite or chert and fashioned by percussion flaking. Since this site was well outside of the reservoir area and there was no danger of its being destroyed by reservoir action, no great amount of time was expended upon it.

Site 44Ha9.—A small village site found on a primary terrace in a wooded section of Occaneechi Island at 78°35′29″ longitude, 36°39′07″ latitude was partially eroded by high water in 1940. This action washed out a number of sand-tempered sherds as well as a small, tapering poll greenstone celt which were found alongside one of the holes. Testing showed that practically all of the site was destroyed by this action.

Coe designated this as his Va 17 site, while Harrington listed this as his No. 5 site.

WARREN COUNTY, N.C.

Site 31Wa1.—On a small hill that drains into Dix Creek lay the remains of a small flint workshop, over whose surface, for an area roughly 50 feet long by 40 feet wide, were scattered a large number of stone chips together with other stone breakage. No partially completed forms or any discards were recovered from this site. Usually such forms occur rather frequently over areas where flint artifacts were fashioned. Testing showed that the deposit was confined entirely to the present surface.

VANCE COUNTY, N.C.

Site 31Va1.—In a large cornfield in Vance County, N.C., were found a large number of stone chips covering an area roughly 45 feet long by 30 feet wide. Upon testing, it was found that the deposit did not extend below the present surface of the field. If there was any depth to the original deposit, plowing action had destroyed this evidence. No artifacts were found from the area, which occurred at 78°21′15″ longitude, 36°30′26″ latitude.

Site 31Va2.—At 78°21′17″ longitude, 36°30′26″ latitude was a small flint workshop measuring 25 feet by 45 feet. All the deposit rested directly upon the present surface of the land.

EXCAVATIONS

From this assemblage of sites, a number of key sites were set aside for excavation, since they represented the total aboriginal time coverage within the reservoir limits.

In an earlier article (Miller, 1947) the following sites were recommended for excavation—44Mc7, 44Mc10, 44Mc14, 44Mc19, 44Mc21, 44Mc53, 44Mc66, 44Mc72, and 44Ha7; the following sites were recommended to be trenched—44Mc17, 44Mc18, 44Mc50, 44Mc64, 44Ha1, 44Ha2, 44Ha5, 44Ha6, and 44Ha9. Owing to conditions beyond the control of the writer, not all these sites were investigated. Later, when time came to investigate these sites, a number had been destroyed by constructional activities, others by reservoir clearance, while high water within the reservoir area made it impossible to investigate still others.

However, excavations were made at the following sites; Clarksville, 44Mc14; Tollifero, 44Ha6; Hyco River, 44Ha7; Grassy Creek, 44Mc53; Fields Island, 44Mc23; Easter Creek, 44Mc7; Pan Handle Creek, 44Mc10; and Buffalo Creek, 44Mc17. Testings were made in the following: 44Mc18; 44Mc21, called the Old Skipwith's Mellon Patch at the head of Fields Island; 44Mc66; 44Mc72, Hundley Tract No. 1; 44Ha1, head of Occaneechi Island; 44Ha5, caretaker's house on Occaneechi Island; and 44Mc62, second site on Hundley's Tract No. 1.

Those that were investigated represented a series of cultural stages beginning with the remains of Early Man (Paleo-American), developing through the Archaic, and ending with a series of Woodland cultures.

To better understand the significance of this, a brief summary of the overall archeology of the area is being presented. At this time most archeologists tend to group the cultures of south-central Virginia and the bordering section of North Carolina with the Middle Atlantic Province in conformance with Holmes (1903), whose closest generic relationship lies to the north and northeast, whereas the Algonquian linguistic stock held sway over a considerable geographical area as well as for a long period of time. Relative to this, the area was used by earlier Paleo-American and Archaic groups who roamed the wooded terraces and bottom lands, seeking out the various animals whose existence governed their economy and movements. Evidence now shows that these roving hunters and food gatherers directed their attention to certain areas more than to others in which were located concentrations of stone chips, as well as fragmentary and discarded stone tools; these occurred either in the reservoir area or on the upland regions. In addition to this manufacturing discard, a large number of stone tools were recovered from the surface, which were either lost or eroded out of context. Certain ancestral forms and archaic types of projectile points all attest to long occupancy of the area. At the beginning, the main weapon, a dart, was developed and used in combination with a throwing stick, or atlatl, which acted as its propellent. Dart heads at this time were rather well made and neatly chipped, but they grew heavier and larger as well as cruder during the later phases just before the bow and arrow were introduced along with the lighter and smaller projectile points.

It was probably during the late phase of the Archaic that the bow and arrow were introduced along with the art of pottery making, a trait which later was to revamp their mode of living, changing them from a roving to a sedentary-agricultural group. Pottery forms were simple, never complex, and consisted of ollas, bowls, and later dippers.

House remains were evidently so meager and intangible that none have been located that could be attributed to these early periods. In the Woodland communities the individual houses were very loosely grouped, a trait which was retained up to the coming of the white man. We have found no positive evidence that palisades were ever built around any of their settlements; neither were there any well-defined streets or ceremonial areas, as illustrated by DeBry and John White in their drawings. Archeological evidence thus far has failed to corroborate a number of traits indicated by these two men.

At no time during the entire life span of the area were projectile points numerous, a fact which would indicate that these people enjoyed a peaceful community life, with no fear of aggression, and warfare was either personal or of limited duration. The lack of projectile points also signified that the great stresses which were so much in evidence just before and after the coming of the white man were not felt by these peoples.

Burials were made wherever a convenient place was selected, and areas were not set aside as cemeteries. Burial forms, reflecting a phase in their socioreligious beliefs, were modified as these concepts were developed from a simple direct approach to a more complex ritualism. At no time during the aboriginal occupancy were burials accompanied by specially constructed mounds or tombs or were artifacts made especially to be placed with the dead. Personal decorations and ornaments were few and consisted primarily of paint and shell beads, with bone, copper, and stone featured rarely. Totemism is indicated in the placement of the totemic animal alongside the dead within a common grave.

The sequence of cultures as found in the John H. Kerr Reservoir area is as follows:

	Paleo-American	? to 7000 B.C.
	Early Archaic	7000 to 4000 B.C.
Neo-Indian	Middle Archaic	4000 to 2000 B.C.
Transitional	Late Archaic	2000 to 1000 B.C.
	Early Woodland	1000 B.C. to A.D. 500
	Middle Woodland	A.D. 500 to 1100
	Late Woodland	A.D. 1100 to ca. 1600

EARLY[3] MAN IN VIRGINIA

A number of Early Man (Paleo-American) artifacts have been recovered from the John H. Kerr Reservoir area, so a brief review of what is known about him is given. Such information as could be gathered from related sources is included to furnish the background material for this study.

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[3] The term "early" is used here to denote his relation to modern Indian rather than a similar biological factor in the Old World. Early Man of the New World was not "Paleo-Indian" in that he was not the progenitor of the historic Indian, as the connotation would imply, but was a distinct form of man whose disappearance cannot be accounted for at the present time. Henceforth, reference to him will be termed "Paleo-American" in the present report. (See Krieger, 1954, p. 15.)

So far as is known, at the present time, no remains of the great apes have been found in the New World, but just because they have not yet been found does not preclude the possibility that someday they may be discovered. "Thus far there has been no evidence, either in the form of the remains of human precursors or of truly primitive types of man, to warrant the occasionally expressed belief that there was an indigenous origin and development in the Western Hemisphere" (Roberts, 1943, p. 171).

Since it is not known how many times in the history of the world a land bridge existed between Alaska and Siberia leaving the possibility open for these forms to make their way to the New World, it is not fitting to pontificate in saying that these forms of life are not to be found here. To say so would place modern archeologists in the same category as those in the past who vouched that Early Man could not possibly have existed in the New World. Some of these men, who were so positive that he never existed in the New World, lived to repudiate their conclusions.

It has been postulated that waves of migration of Early Man, after crossing the Strait, traveled over a number of pathways. (1) He could have gone north by fighting his way across the Brooks Range, a really formidable barrier, and then have turned eastward along the Arctic coast to the mouth of the Mackenzie River. Once this goal was reached, the way to the southland and the Plains through an ice-free corridor was open. (2) He could have traveled via the Upper Yukon and its tributaries and the Liard and Peace River Valleys to the Plains. (3) He could have gone south along the Fraser River, between the Rockies and the Coastal Range and into the Great Basin (Roberts, 1943, p. 194).

Just how long it would take a group of immigrant people, not acquainted with either the geography or the topography to discover these routes southward and into the interior of North America can be conjectured. Whether there were well-established animal or game trails or other hints that abetted them is not known, but it is known that they would have had to take one of these pathways.

> The presence of men in the New World at a time when lingering portions of the great ice sheet still covered large areas of North America raises the problem of glaciation, its effect on climatic conditions, its bearing on routes of travel, the movement of peoples, and the animals that were their main source of subsistence. Studies along these lines are far from complete and there is much to be learned. Enough is known, however, to provide a basis for a few broad conclusions. [Roberts, 1943, p. 35.]
>
> There are differences of opinion regarding the routes followed, although many of those who have given serious thought to the problem believe that most of the movements were by way of the Bering Strait region with the bulk of the early aboriginal population arriving through that port of entry and gradually spreading down across North America, through Middle America and into the southern continent. [Ibid. p. 171.]

> I am fairly sure that the earliest arrivals here were non-Mongoloids carrying archaic white strains ('Australoids,' if you like) probably mixed with Negritic elements and with whatever else was kicking around in Asia before they crossed Bering Strait. Unquestionably there were several subsequent groups of immigrants, some of them full-blown Mongoloids. [Hooton, *in* Gladwin, 1947, p. xi.]

Primitive man is not one given to long and arduous travel without motivating factors, such as the movement of the large game herds upon which he feeds, population pressures, or ecological conditions which determine the plant food available in sufficient quantities to sustain life.

We know that cultural progress was slow, particularly during the Paleolithic Period, or the Old Stone Age, when man was developing the craft of chipping stone and learning how to hunt and gather food efficiently. As he learned these arts, cultural changes moved more rapidly so that he became more skillful in knowing where, when, and how to gather the natural food products, as well as in the hunting of animal life, and the developing of the necesary tools to carry on these enterprises.

> It is important to realize and remember that early man ate seed grains, tubers, and fruits before he knew how to cultivate them. Probably he began to eat more and more of these natural products just before he became a farmer. Because archeologists have found evidences that early man was quite a food gatherer at the end of his career, they have been inclined to set up another classification system which is faulty. They see man first as a hunter, then as a food gatherer who was still a hunter, and then as a food gatherer. This ignores the very important fact that man began as a food gatherer and not as a hunter.
>
> When the first man climbed down out of the trees he was probably still eating the food of a great ape—fruits, nuts, roots, and berries, and perhaps grubs and insects. Occasionally he may have varied his repast with birds' eggs and fledglings. Erect on solid ground, with a broken branch for a weapon, he improved his diet a bit. He knocked over small animals, and he may occasionally have got hold of the carcass of a large one before a saber-toothed tiger arrived on the scene; but, for thousands upon thousands of years, he was basically a vegetarian. His first well-developed stone tool—the hand ax shaped rather like a flattened and pointed egg—was probably more useful for grubbing roots and tubers out of the ground than for killing animals. As early man learned to make more efficient weapons—first the curved throwing stick, then the spear and spear-thrower, and finally the bow and arrow—hunting became his chief activity, and meat his chief diet. But his women went right on gathering berries and nuts, tubers and seeds, and getting ready to invent agriculture. Certainly in the New World—perhaps in the Old World, too—she invented milling stones to grind seeds while her man was still a paleolithic. Perhaps when she watched the wearing away and the smoothing down of mortar and pestle, milling stone and mano, as she ground her seeds into flour between them, the idea may have occurred to her—or to her man who watched her labor—that it was possible to grind and polish stone into axes and other implements. [MacGowan, 1950, pp. 34–35.]

Linton (1951) stated:

> . . . the greatest handicap is our lack of precise information on the ecological areas of North America during late glacial and immediately post-glacial times, and especially regarding the movement of these zones in response to short-term

> climatic changes. Hunting, food-gathering societies are as dependent upon their natural environment as any other mammalian species. Having developed the techniques needed for exploiting the food and materials provided by a particular ecological configuration, they are reluctant to migrate to territories where new techniques will have to be invented or borrowed. They will move with a particular ecological area as its position shifts in response to climatic changes and they will not push out from it into areas of markedly different ecology until forced to do so by population and other pressures.

MacGowan (1950, pp. 18 and 20) has written:

> Too many authorities have written as if early man made a free choice of routes through Alaska and Canada. Actually, the animals he hunted chose his routes for him—doubtless many routes. Unless he had learned to spear and net fish, the first invader probably pursued a herd of mammoth or musk ox across the land-bridge or over the frozen ice of later winters. . . .
>
> If you want to understand early man, and guess with accuracy at why he came to the New World and how he happened to drift southward and eastward until he fills it, you must think of him as a wanderer looking for food. Game lured him on at random, and vegetation lured both beast and man. Man might eat his way through caribou country, and come upon the bison of another area. But the animal—and the man who ate berries and roots and wild grains as well as meat—would move as the climate moved. The world has known many changes of climates and shifts of rain belts. Some of these have been extreme—in the Great Ice Age, for example—and some have been less marked. But they have moved the forests and the grasslands, and animals and man have moved with the vegetation.

Insufficient study of the accumulated facts have indicated that early man became so populous that he forced himself into undesirable portions of the Old World, such as northeastern Siberia. Ecological conditions during this interval are not known; whether they were undergoing changes like droughts which compelled the large mammals to migrate northward into Siberia with man trailing along or whether similar conditions were taking place in the northwestern section of the New World at the same time: all this is unknown. We do have a lot of *ifs* and *whys* to answer before we can satisfactorily indicate and explain man's wandering up to Siberia and his subsequent crossing over the land bridge into the New World.

> Today we have a few facts about early man and many guesses. Not so long ago there were many reputable anthropologists who believed that the New World was innocent of man before 1,000 B.C. Now most of them grant a foothold at least 10,000 years ago to an enterprising savage—called Folsom man—whose taste for travel was as great as his talents for making an exceptionally fine and original type of stone spear point. Some say he came to the New World 25,000 years ago. A few daring students find traces of an earlier Australoid human who may have seen the last glaciers taking shape. Well-informed opinion places man's entrance into the New World between 10,000 and 25,000 years ago. . . . As we go deeper and deeper into the past and reach the time when the glaciers were waxing and waning, five or ten thousand years one way or another becomes a matter of opinion. [Gladwin, 1947, p. 24.]

Anthropologists must keep an open mind, not cherishing dogma or refusing speculation, for the truth still lies far off.

Considerable literature (see Sellards, 1952, for bibliography) has been compiled about these people. As yet we cannot positively indicate their place of origin; how they came to this country; when they first arrived; whether there were various influxes or tides of migration; and what has happened to these earliest of men into this country. Roberts (1935 a, 1935 b, 1935 c, 1935 d, 1935 e, 1936, 1937, 1938, 1939, 1940, 1942 a, 1942 b, 1943, 1945), Sellards (1916 a, 1916 b, 1916 c, 1917 a, 1917 b, 1917 c, 1917 d, 1919, 1932, 1935, 1936, 1937, 1938, 1940 a, 1940 b, 1945, 1947, 1955), Sellards et al., (1947), MacGowan (1950), Sauer (1944), and other students have attempted to answer a number of these questions. *The present climate of opinion is that Early Man, formerly an inhabitant of Asia, made his way across a putative land bridge before or during the Mankato interglacial period, where Bering Strait now exists, on the fringe of territories occupied by large migrating mammals. This crossing from Asia to Alaska presented no problem, as a small lowering of the sea level at the beginning of the Pleistocene converted the strait into a land bridge and may have done so again later.*

Whenever man crossed over into the New World he might have brought along with him certain technical knowledge, i.e., how to chip and fashion stones into tools, such as projectile points. Whether these were his only tools of trade can be questioned, for it is certain that he possessed a number of other tools of stones, such as scrapers, knives, choppers, hand axes, etc., all of which entail certain cultural linkages. Then, to think of a naked human being braving the rigors of the arctic weather and traveling long distances without bodily coverings is almost inconceivable. He must have earlier developed the skill of dressing the pelts of his kill in order to fashion wrappings for his body to keep the cold out and the bodily heat close to his skin.

Simpson (1940, p. 149) (fig. 1) has attemped to explain the selective filtering of mamalian faunal interchange between Asia and the New World by stating:

> In the whole history of mammals there are exceedingly few cases where the evidence really warrants the inference of a wide-open corridor between the two distinct continental masses. The usual sort of connection is selective, not acting as a corridor or open door but as a sort of filter, permitting some things to pass but holding back others. From the probable mechanism of such filtering of faunas, it follows that these connections were usually of narrow environmental scope and their continental abutments limited, drawing only on one faunal zone of the continent, not on its fauna as a whole. In other words, the usual evidence for such connections does not suggest "lost continents" comprising parts of two or more as they exist today, or even broad trans-oceanic pathways, but relatively restricted links. The analogy of a bridge for such selective or filtering connections is fairly good, and it is to them the term "land bridge" most properly applies.

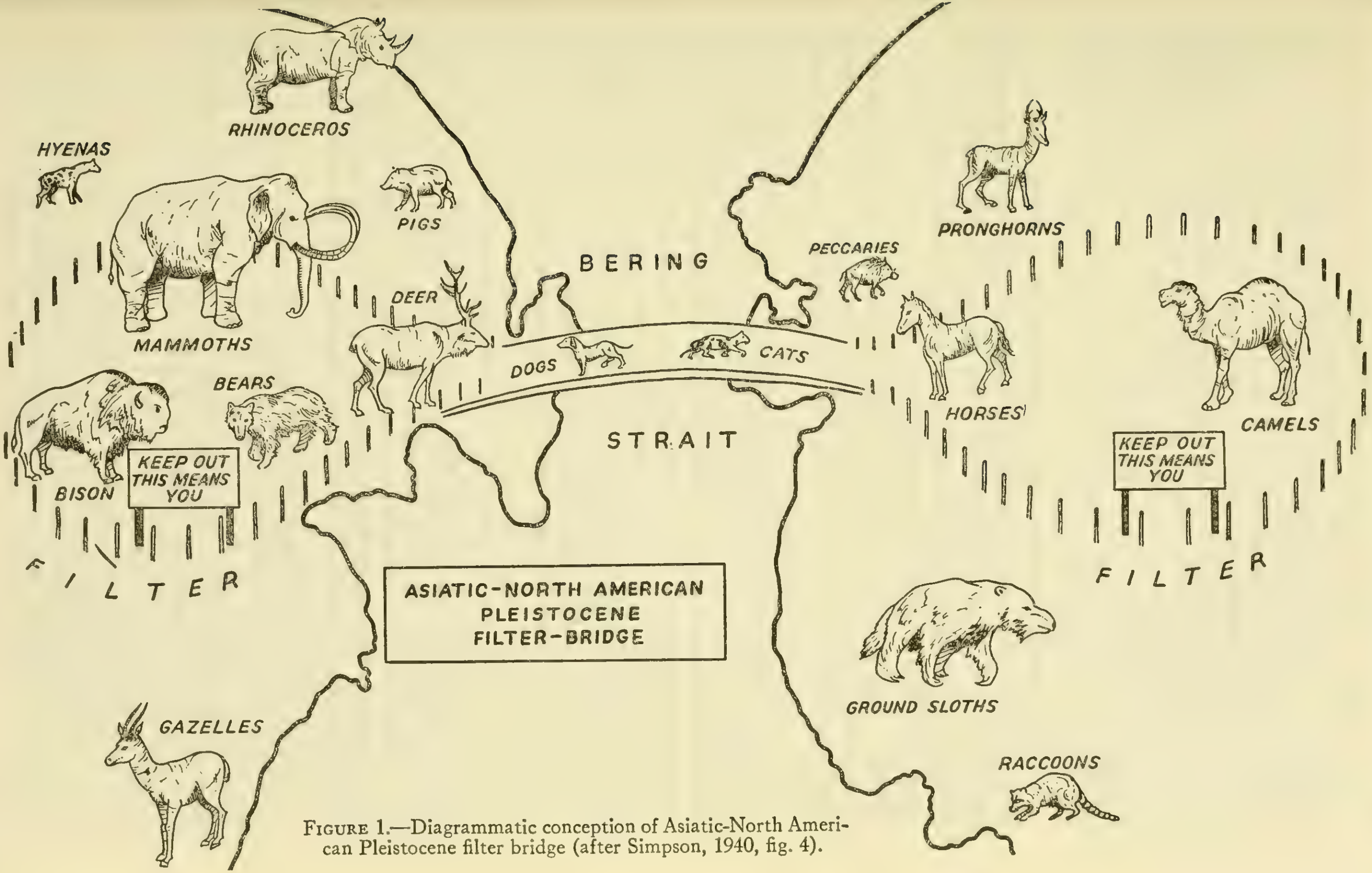
RHINOCEROS
HYENAS
PIGS
MAMMOTHS
DEER
BEARS
BISON
KEEP OUT THIS MEANS YOU
FILTER
BERING
DOGS
CATS
STRAIT
PECCARIES
PRONGHORNS
HORSES
CAMELS
KEEP OUT THIS MEANS YOU
FILTER
ASIATIC-NORTH AMERICAN PLEISTOCENE FILTER-BRIDGE
GAZELLES
GROUND SLOTHS
RACCOONS

FIGURE 1.—Diagrammatic conception of Asiatic-North American Pleistocene filter bridge (after Simpson, 1940, fig. 4).

> Here the character of the mammals is a determining factor. What is a barrier for one is not for another, and conversely what is an open route for one is not for another. The Asia-North American bridge opened the barrier for elephants (mammoths) but not for gazelles. The North America-South America bridge opened the barrier for horses but not for bison. This strongly selective action depending on the position and character of the bridge and the consequent environmental conditions of it and of its approaches is a rule with few exceptions. Another way of putting this would be to say that the true barrier in such cases was not the presence of a stretch of sea but some less obvious environmental factor, such as climate or vegetation, and that for these animals the apparent bridging of a barrier had no meaning because the true barrier remained untouched.

Western Alaska is an outlier of Arctic Asia and it was during this interval that the lowlands of Alaska were supposed to have remained unglaciated, making it available for the habitation of any group of people who were accustomed to living in high altitudes.

Sauer (1944, pp. 534–536) says that:

> If man entered the New World well after the Ice Age,[4] there is no problem in his dispersal east or south from Alaska. It is only if man came while there were still continental glaciers that there is difficulty about his passage beyond Alaska.
>
> The corridor by which man may have come from the open lowlands of Alaska to the Plains of the United States is uncertain, as are the times at which this may have been possible. The answer waits on the determination of glacial successions in western Canada. Viewed from south of the border, a late corridor through Alberta does not look promising, because of the Late Mankato drift on the northern Great Plains and the probable ice center over Great Slave Lake. We need to know in detail the drift history of the plains east of the Rockies both in Alberta and in Yukon Territory. An alternative route may be an intermontane corridor through British Columbia and the western Yukon, where rain-shadow conditions possibly facilitated deglaciation or prevented glacial spread.
>
> The remains (of Early Man) point definitely to hunting cultures. Such people had high mobility and could follow herds of game animals through any corridor that opened between Alaska and the United States, provided that nutritious vegetation speedily reoccupied ice-free surfaces. In the case of Folsom Man, the association of sites with glacial and pluvial deposits have made acute, since the first discovery, the question of the earliest moment at which a gap opened in the Wisconsin ice of Canada through which immigrants might have squeezed.
>
> If we knew nothing of European archeology, an estimate of these folk as going back at least twenty or twenty-five thousand years, such as was made by

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[4] Radiocarbon dating methods have outmoded this concept. It was formerly thought that the earliest migrants were hunters but evidence is now accumulating that the earliest comers, dated 24,000 years or earlier, were foodgatherers who had little knowledge of chipping stone into projectile types or other stone tools but who utilized grinding stones to reduce the wild seeds into meal suitable for human consumption.

When man first began to make stone tools he pounded one rock with another hoping to knock off just the right chip in the right place. This method is known as percussion flaking. Not being satisfied with this manufacturing method, man then learned that by using either a tine from a deer's horn, a piece of bone, or a very hard piece of wood as a supplementary tool he was able to control his chipping and to throw off smaller and finer chips and to make his stone tools more symmetrical. This method is called pressure chipping.

> Kirk Bryan for the Lindenmeier site in Colorado, would meet with no opposition. The alarm at these figures is due partly to the ingrained habit of setting up short calendars for the New World and partly to the high stone-working skill of these ancient hunters, who in Old World terms would be called advanced Mesolithic. Archeologists are not ready to face the disquieting thought that any skill that may have been introduced (or developed?) in the New World may have had priority in any part of culture history over western Europe. [Sauer, 1944.]

Geologists have placed a tentative date of around 25,000 years for the closing of the Pleistocene age, the time when man first appeared in the New World. By means of radiocarbon dating methods developed by Dr. Willard F. Libby, one of man's earliest western lithic industries has been dated at Tule Springs, Nev., approximately about this same time (Harrington, 1955).

A new radiocarbon date has been released for the Tule Springs site in southern Nevada in which were found crude scrapers and choppers, bone tools, and masses of split and burned bones of camel (*Camelops hesternus*), horse (*Equus pacificus* and *Equus* sp.), deer (*Odocoileus* sp.), mammoth (*Parelephas columbi*), and bison (*Bison* aff. *occidentalis*),[5] as well as large masses of charcoal and ash beds.

The date of 23,800-plus years, by radiocarbon methods, constitutes at the present time (1957) the oldest radiocarbon dated site in the New World and extends man's existence over a much longer period of time than heretofore realized, thus negating the Mankato altithermal geological period as the time of his arrival in the New World and assuring us of a Paleolithic man comparable in time with Old World forms of *Homo sapiens sapiens*. Just how much older than this date would indicate is not known since all measureable radioactivity has ceased in the Tule Springs material, causing it to be classed as "dead." This gives the coup de grâce to the concept that the earliest existence of man in the New World occurred during the terminal phase of the Pleistocene. Instead, it places his presence well within the Pleistocene limits, indicating a much longer period of human occupancy of the New World, a feeling that has been growing ever stronger and more apparent that the old arbitrarily established age ceilings must be discarded, leaving the way clear for objective unbiased research.

In the light of this Tule Springs date, it now appears that Dr. Kirk Bryan, who believed from his studies that man entered America at an earlier date than noted by other geologists, has been vindicated and his estimates proved more nearly correct. Bryan thought that

> a route or migration through the Canadian Plains may have been open twice during periods of milder climate in the Wisconsin; once during the interstadial

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[5] . . . "which is not *Bison occidentalis*, by current standards of species making, and would have to be placed in a new species. It belongs, however, to the general group of *B. occidentalis, crassicornis, chaneyi, taylori, texanus*, and possibly some others, without resembling any of these closely enough for specific reference. It differs from typical *occidentalis* in being more robust, with broader frontals and longer and stouter horns." (Simpson, 1933, p. 6.)

> between Wisconsin I and Wisconsin II and again during the interstadial which separates the latter from the third or Mankato substage. He believes it possible that certain groups, the Sandia people, the ancestors of the Minnesota girl, and perhaps others, may have entered this continent during the last of these interstadials. [Bryan quoted in Wormington, 1949, pp. 152–153.]

Sandia material is not only "dead" but is outside of the range of radiocarbon dating (Crane, 1955, pp. 689–690).

No longer is the date for the Folsom (Lubbock, Tex.) date of around 10,000 years accepted as the date of man's earliest industries, for Roberts (1951 a) has indicated:

> It is interesting to note that the sandals from the Oregon cave (Fort Rock Cave, 9,053 plus or minus 350 av.), the material from Gypsum Cave (10,455 plus or minus 340 av.), the Nebraska site (Lime Creek, 9,524 plus or minus 450 av.), and some of the sites in South America (Palli Aike Cave, Chile, 8,639 plus or minus 450) approximates the the same antiquity and that they not only demonstrate the occupation of the New World about 10,000 years ago but show that several cultural patterns were already well established at this time.

From this we can infer that the South American date represents a much earlier migration than those represented in the finds of Gypsum Cave or the Lime Creek and Fort Rock Cave remains. This would imply that a much longer time must be assumed for his initial immigration and that in reality the men of South America (Palli Aike Cave) must be older in actual time relations than the northern industries indicated above. In other words, it has taken man a longer time, much longer than most people realize, for him to travel from the vicinity of the Arctic to the Antarctic regions and to develop certain cultural traits and ideologies as he went along.

Other carbon 14 dates which have been released cover a like time span. These are:

Sandia	19,000 to 24,000
Clovis	12,000 to 13,000
Danger Cave	11,453 plus or minus 600
Russell Cave	9,000 plus or minus 250
Cochise	8,000
Plainview	7,700
Eden	7,000
Bat Cave	5,000 to 7,500

At best, archeological evidence of paleo-aboriginal remains are very scanty, depending largely upon lithic remains such as choppers, projectile points, and scrapers. Our earliest dated projectile types, secured from the Lewisville site in Texas, which have been dated as older than 37,000 years, do not represent the earliest of projectile forms. Tips of bone and wood must have preceded the lithic forms and to a certain extent governed the concept of attaching a tip to a shaft uniting the two into a common item. Therefore, many of the New World forms are as old or older than those dated in the Old World.

Heretofore, many of the statements relative to the age of Early Man in the New World were based upon assumptions that have not been proved to be checkable. Most of these dates are dependent upon geological estimations and early radiocarbon dating that will bear rechecking, since the dates were never checked against materials collected by other workers from similar sites. It is true that Libby's early methods were only indicative; by no means should they be taken as pontifical of the approximate age of these various finds, and until we can get two independent agencies to test objectively and simultaneously common datable material and to derive similar results can this method of dating be accepted as thoroughly reliable.

Hunt (1955) seems to think that environment position plays a major role in the dating of carbon 14 specimens. Materials from arid areas invariably give much older dates than comparable deposits from humid zones, owing to absorption of carbon 14 elements in ensuing years.

From the above we know that man was living in the New World prior to Mankato altithermal period, but we have no such evidence of his being in the Roanoke River Valley or in nearby areas at this time. We do know that he did not bother to leave behind any evidence of his being in the lower reaches of the valley because it had not formed at the time he was present, but that all remains attributed to him have been found on the upper terraces or upper areas away from the present streams.

Man, at a very early stage, after seeing the advantages offered by fire in its natural conditions, must have spent many long hours thinking of how he, too, could create this phenomenon of nature at will. Having had neither previous experience of creating or inventing nor any background upon which to build, he would have had to be a world genius to go through all of the complicated steps in his mind, thinking through the various factors that are involved before fire could be made: the requirements of two types of wood, the placement of these pieces correctly, the small cupped hole in the horizontal piece in which the upright stick must revolve, and the channel off this for the spark to fall upon properly prepared tinder, which must be carefully nursed before a blaze could be created. That a primitive brain could have conceived and solved this most complicated problem in physics and chemistry is attested by the remains of his hearths in various parts of the world. Once having successfully created fire by means of friction, he raised himself above the animal level, taking his first real step toward the goal of world domination and civilization—the greatest single step in the events of mankind.

After his willful creation of fire, man was able not only to move out into the open but to occupy caves as shelters, to keep warm, and to cook his food. Once a fire was started within a cave shelter it was probably kept alive over long periods of time. In the event of any animal becoming bold enough to invade this shelter it could easily be driven away by casting flaming bits of wood at it. Man at this phase was no longer dependent solely upon the sunlight, for now he was able to regulate his waking hours by giving himself a longer period over which he could stay awake. He could gather around his fires after dark to work and chat with his fellow kind, thus lengthening the time of conscious control. This is one task he has put fire to, another was to fire-harden the tips of various wooden implements such as spears, needles, etc., thus making fire his working partner.

De Mortillet (1881, pl. 11, 63) illustrated a triangular point which MacGowan (1950, p. 69) designated as "Man's First Spear Points." A comparable point (pl. 14) was found at site 44Mc75. It was made from a thin flake of chert, which required very little effort to convert into the projectile tip. No percussion flaking is present and only the edges have been chipped with the slightest attempt to reduce the size of the bulb of percussion by pressure flaking. The point in question measures 44 mm. in overall length, 24 mm. in greatest width, and in the vicinity of the bulb of percussion it measures 6 mm. in thickness, while the rest of the point is only 3 mm. thick (fig. 2).

The stubborn resistance to the concept that early man never existed in the New World was dealt its death blow in 1926 when a number of qualified archeologists verified the existence of manmade artifacts in direct association with the remains of extinct fauna at the Folsom site in Union County, N. Mex. Heretofore, no American archeologist would dare to report such finds without suffering at the hands of certain individuals who dominated the field. This was by no means the first such find reported. Early in the 19th century, Koch (1839 a, 1839 b, 1857) directed attention by demonstrating the contemporaneity of man with mastodon in Missouri. Dickeson (1846), Drake (1845), Nott and Gliddon (1860), Usher (1854), and a host of others reported on finds of manmade artifacts in direct association with extinct fauna. A most notable find was reported by Abbott (1872–1889) from the Delaware Valley near Trenton, N.J.

Hrdlička's domination of the scientific thought that Early Man could not possibly exist in the New World was despotic. He judged that man and his culture in the New World must follow similar evolutionary trends as exhibited in the Old World. Words of his own are as follows:

> On being subjected to thorough critical scrutiny, however, the antiquity of the majority of the finds on which the structure of man's antiquity in America was or is to be reared vanish as evidence, and the residue is supported by testimony

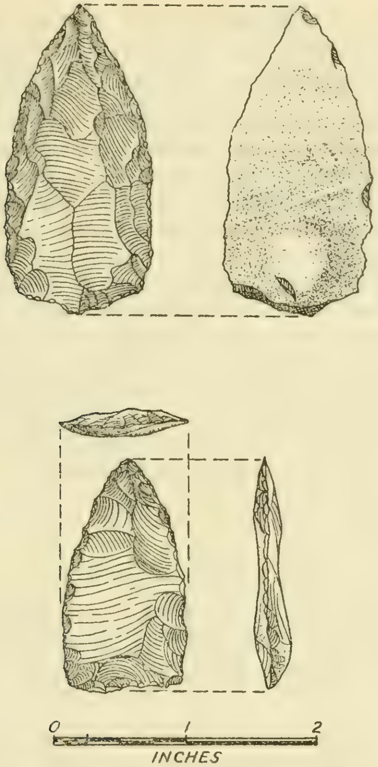

Figure 2.—Two views of a flake of flint chipped on one face and retouched along the edges. (To remove the tiny lateral chips, it was probably held with the smoother side against a hammerstone.) (After de Mortillet, 1881; MacGowan, 1950, p. 69.)

> so indecisive that no conclusion of geological age of the remains can legitimately be based thereon. Impartially weighed, the probabilities are in every instance against rather than for geologic antiquity. . . .
>
> If man had originated in America and spread thence to other continents, or if he had come here hundreds or even scores of thousands of years ago, there should by this time have been found some evidence of his antiquity which could be freely acceptable to all, as are the remains of European early man. Wherever man has lived for any length of time he has invariably left behind him implements, utensils, and refuse containing shells and bones of contemporaneous mollusks, fish, birds, and mammals, with remains of fire. If there is no such evidence, or at least none that the most thorough students of the subject can conscientiously accept, then assuredly we are not justified at the present time in accepting the theory of any geological antiquity of the American race. [Hrdlička, 1928, pp. 486–487.]

Artifacts from the Trenton gravels caused quite a commotion and resulted in considerable literature. Sellards (1952) has indicated that, at the present time, they have been vindicated of their taint and are now accepted as positive proof that Early Man once occupied this portion of the Delaware Valley.

Hrdlička's evaluation of the Trenton crania is typical in that he links these finds to similar 9th- and 10th-century Swiss and Lowland folk. He does admit (Hrdlička, 1907, pp. 41–42):

> The inevitable conclusions are that the Burlington County skull and that from the Riverview cemetery at Trenton are of a type different from that of the Lenape, or of any other Indian crania from the East or elsewhere of which we have thus far any knowledge. They are skulls of people of a different race with which no further acquaintance has yet been made in this country. What this race was, the writer was not able to show at the time of publication of the report in 1902. Two possibilities suggested themselves at the time: One, that the crania represented some non-Indian people who preceded the Lenape about Trenton; the other, that they might be crania of later intruders—or immigrants—into that region. The former theory could not be accepted without further proof, and the immigrant idea seemed hardly plausible, for the Delaware valley had been settled largely by Swedes, whose cranial type is radically different. On the whole there are very few localities known in Europe or elsewhere, where normally very low skulls have been observed.

With this he admits that he is at bay and cannot identify the racial stock of these finds.

Since these skulls are well within the normal limits of modern man, so to speak, recent indications are that *Homo sapiens sapiens* skeletal forms are every bit as old as Neanderthal types and that his frame has not changed in the past few thousand years (De Terra, 1948–1949; Figgins, 1935 a).

Hrdlička made a miscalculation on the Vero finds, as ably demonstrated by Stewart (1946). After reconstructing the Melbourne skull and comparing it with the one recovered from Vero, Stewart is of the opinion that:

> The Melbourne skull is surprisingly similar in form to the Vero skull, which was found under like circumstances. I have shown, moreover, that the fragmentary nature of the Melbourne skull makes it impossible to determine its original form with complete accuracy. Nevertheless, the new version must approximate the original form because it depends upon careful matching of the fragments and not upon a preconceived notion of what the form was.

From evidence of other Early Man finds (Figgins 1935 a; De Terra, 1949; Jenks, 1935, 1937; Jenks and Wilford, 1938), it now appears that the archeologist must accept the fact that Early Man does not differ physically from modern man. Whether these finds, as well as others, will be accepted as attributable to this early period must await time, but the climate of opinion is in this direction.

The first "Folsom" find was in reality reported by S. W. Williston in 1902 in an article "On the Occurrence of an Arrow-head with Bones of an Extinct Bison." In this he tells of a fluted point accompanying the bones of *Bison occidentalis* as found by Overton and Martin in the summer of 1895 while collecting vertebrate fossils in western Kansas. If this same article were to appear in any modern journal it would receive very little comment and would be accepted as routine findings. The projectile point was—

> found underneath the right scapula of the largest skeleton, embedded in the matrix, but touching the bone itself. The skeleton was lying upon the right side. The exact locality of the bone bed is about one-half mile north of the Smoky Hill River on Twelve Mile Creek in Logan County, Kansas, twelve miles east of Russell Springs and eighteen miles south of Monument Station on the Union Pacific railroad, in Township 14, Range 33 West.

A number of students of Early Man have disparaged the works of J. D. Figgins (1927), but it was he who first drew the attention of the scientific field to the original Folsom finds near Folsom, N. Mex. These finds were indorsed by Barnum Brown, Howard, Roberts, and others and paved the way to the real study of Early Man in the New World. Without the report of these accidental finds by a western Negro cowhand, even this important site would have gone unnoticed. Nearly all great scientific discoveries were accidents, and this was no exception.

In the last few years another important Early Man find was made in the vicinity of Natural Bridge, Va. In excavating the base upon which a motel was to be built, a series of 12 skeletons were uncovered—7 in one row and 5 in another. All were extended and lying somewhat on their right sides, right hands under jaws, left hands down to their sides, heads to the north, and facing to the west. Associated with these skeletons were two Eden-like fluted points. The larger point, dimensions unknown, lay alongside the shoulder of the westernmost skeleton in the top row and the smaller point occupied a similar position in the bottom row. Beyond the heads of the top row of skeletons were small piles of limestone nodules whose functions and purposes were unknown.

This find was made in 1951 by D. W. Martin and was reported to the Smithsonian Institution in 1954. The writer immediately investigated this find only to come up with a blank. All bodies were destroyed as part of the fill beneath the motel and the buildings were constructed over the spot. The two projectile points were either mislaid or lost, for they have not been seen since. The only tangible remains were in the form of one of the limestone nodules that rested beyond the top row of skeletons. From what the writer could gather, all bodies appeared to have occupied a common grave, as they were almost touching one another. Most of the bones were crumbly but some of the skulls were reported to be fairly well preserved. Thus was lost to science one of the most important finds of Early Man in Virginia and the eastern section of the United States. As far as the writer knows this is the only known burial of makers of Eden-like projectile points in the East or elsewhere.

While digging a septic tank farther down the hill, Mr. Martin came across the remains of fires, two hearth areas, 7 feet beneath the present surface. He wondered about them but not being too interested, the charcoal contents were destroyed. A further record of early times went the way of the dodo.

Next in the chronological scale comes "Yuma man." Sauer (1944, pp. 538–539) has this to say about him:

> Yuman man lived well into postglacial time, and his arrival has been thought to present no difficult time problems. However, recent studies in Nebraska are indicating a greater age for the culture of Yuma hunters than has hitherto been accepted. . . .
>
> The Nebraska investigators agree in considering the Yuma hunters to have been plainsmen contemporary with the Folsom people of the Rocky Mountain border. There is little doubt that the Yuman culture survived well after the Folsom one had disappeared. The evidence, however, is becoming formidable that Yuman goes back as far as Folsom. The Yuman people fashioned the fine leaf blades that have so often been compared with the Solutrean blades of Europe, but in their art the New World craftsmen clearly surpassed those of the Old World. On the record as it now stands, Yuman predates Solutrean by an uncomfortable margin. The origin of Yuman culture is most perplexing. Pre-Folsom hunters must also be considered. . . .
>
> These early hunting remains are found in localities that at present are semiarid to arid but at the time of occupation were humid. The sedimentary and biotic evidence indicates that they belong to a well developed pluvial period, and I know of no climatologic basis for postulating a postglacial pluvial period. Except Sandia, they have not been determined stratigraphically as pre-Folsom, but they are as old and the points are cruder than, and suggestive of Folsom. Nothing resembling the fluting of the Folsom points appears in European archeology and it has been thought, therefore, that this may be a New World invention developed out of more generalized points of an earlier, also western hunting culture.
>
> The problem of antiquity is raised by yet other finds of early man. Gladwin has pointed out the position of ancient non-projectile and non-blade-making cultures to the south and east of the main range of the ancient hunters and has suggested justly that their position farther inside the New World indicates that they preceded the hunters. Such material lacks the sharply diagnostic qualities of Folsom and Yuma,[6] is decidedly more primitive, and belonged to people that were gatherers rather than hunters. It is difficult to see how such apparently unwarlike folk could have forced their way through a wide development of tough hunting peoples and taken their stations beyond them within the continent. . . .
>
> To this bystander it seems that the fight, first joined at Trenton in New Jersey in the eighties, has been won at last, and that Abbott and Putnam are vindicated. *Pleistocene man can no longer be denied* [writer's italics]; it is only a question as to how far back his title extends in America, and that will not be settled by European records. What does it matter that a skull of Cochise I or Minnesota man can be brought within "the range of the modern American

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[6] Wormington (1957, pp. 1–3, 107) discusses the use of the term "Yuma or Yuman" and states: "In more recent publications the term 'Yuma' is being less and less frequently used, although there is some persistence of the regrettable practice of putting the word in quotation marks and then continuing to use it in the same unwarranted fashion. This certainly does nothing to clarify the situation, and it is to be hoped that this term will be abandoned altogether."

> Indian"? That range has been stretched and stretched until it will accommodate the bones of any New World *Homo sapiens*. [Sauer, 1944, pp. 538–539.]

In order to bring the Cochise culture up to date, Sayles and Antevs have been carrying on for the past three years, a review of the work first done by them and of the new data obtained by them and others. The completed study is not yet finished but it can now be said: the original sequence of stages and their geological associations have been confirmed; radiocarbon dates have essentially supported the original geological dating; new data have confirmed the long duration of the different stages which can be defined more minutely.

> The Cochise culture still represents a basically gathering economy, but one in which hunting is now found to be more important in some stages than was first recognized. Projectile points have now been identified, as a result of further excavation at the Double Adobe site, with the Sulphur Springs stage, the oldest of the Cochise culture. These are leaf-shaped types fashioned from flakes, as well as stemmed and barbed types. The exact relationship of the Cochise culture to other cultures is yet to be determined. but the present study is expected to add much pertinent information. [Sayles and Antevs, 1955, p. 311.]

Hibben's report (1951) of other Cochise sites in the middle Rio Grande Valley of New Mexico has carried the culture farther to the east. Associated with typical milling stones (metates) and handstones (manos) are a number of nondescript chipped-stone artifacts, together with hearth areas, bones of extinct fauna, and charcoal, among which were recognized "pine, box elder, walnut, and cottonwood or poplar" (Hibben, 1951, p. 45). This does not give us any varieties of trees not growing in the area at the present time. Whether carbon-dating methods have been brought to bear upon these finds has not been noted.

Krieger (1951, p. 78) reported on an early bone industry, in which he said:

> In the summer of 1949, excavations of the Texas Memorial Museum at the Clovis site in New Mexico revealed several crudely pointed and beveled bone tools. These were found at different depths within the lowest cultural stratum, which also contained numerous remains of elephants, and, near its top, two Clovis Fluted points. Recently, the assistant editor for early man has reexamined other occurrences of bone and ivory implements found in proved or probable association with extinct Pleistocene fauna. Thus, the controversial bones found with a rich Pleistocene fauna in Potter Creek cave, California, in 1904, include eight or ten beveled bones and tubes, but were not accompanied by stone artifacts of any kind. Crudely pointed and beveled bone splinters, and one stone scraper, have been recovered from the very rich late Pleistocene fossil bed at Tequizquiac in central Mexico. Other bone tools and beveled pins or "harpoon points" have been reported from Oregon, Nevada, New Mexico, Manitoba, Florida, etc., in circumstances suggesting some part of the Wisconsin glacial age. Hence, an ancient and widespread "bone industry" may be emerging but its relation to the earliest stone artifacts of America is not at all clear.

Between Gladwin's ancient nonprojectile and nonblademaking cultures and those of the Sandia, Clovis, Folsom, and Eden (Yuma) groups, there must be inserted a number of other groups who conceived the art of fashioning stone projectile points, which eventually culminated in the forms utilized by the latter groups.

It is not conceivable that men of the Sandia, Clovis, and Folsom cultures migrated into the New World bringing along these precision tools. The so-called Folsom points found in Alaska are totally lacking in the characteristic fine chipping and careful central fluting typical of the types found in the classical Folsom sites. Whether these crude "formative" or "degenerative" forms are in evidence in Siberia has not been indicated in the literature.

To think that a nonstoneworking group or groups conceived the fashioning of and the manufacture of such fine tools as the Clovis, Folsom, and Eden points without displaying the various experimental stages before they were able to turn out these forms is asking too much of one's imagination and credulity.

Recently, while going through de Mortillet's report (1881), I noticed a number of illustrations indicating projectile forms from Robenhausen, a Swiss Lake dwellers' site. These forms indicated various steps in the construction of fluted points formed by transverse chipping and the casting off of a later longitudinal central flake or flakes on either side of the instrument. Whether figure 237 of plate 32 indicated the presence of a "striking platform" is not mentioned in the caption, possibly because such a feature was not recognized at the time. De Mortillet does mention that single, double, or multiple-channel flakes were cast off to give the object a fluted effect resembling certain fluted types found in the New World. He also indicated that the multiple-channel flaking does occur up to eight in number but that these are exceptions rather than the rule.

Recent studies by Byer, Lewis, McCary, Miller, Soday, and Witthoft have indicated a probable shift in concentration of early lithic types from the Western Plains to the southeast and eastern portion of the United States. Fluted points have been reported from every State in New England with the exception of Maine. True, there were only a few found, but they are in sufficient numbers to indicate that Early Man was there during his stay in the New World. Large numbers have been found in Virginia, North Carolina, Tennessee, Pennsylvania, Kentucky, Georgia, Alabama, Mississippi, Texas, Oklahoma, and Ohio, as well as other finds in West Virginia, Illinois, Indiana, and Iowa. Each and every one of these represent important links in knowledge regarding Early Man and all will eventually be interconnected to indicate a picture, as the facts will allow.

This switch in population density may be indicative of the fact that man did not enter the New World solely via the land bridge across Bering Strait. There is a probability that he might have emigrated from Europe following the glacial fringe into Iceland and Greenland

and landed somewhere in the vincinity of Newfoundland. Who are we to say what path he took to enter the New World? Our whole premise of Early Man's entrance into the New World has been built upon conjectures which have taken on an appearance of fact and which could not be proved if put to a rigid test.

We can hypothesize on reasonable grounds that Early Man came out of Asia, and all we can do to explain his culture is to extend the present state of affairs backward into the past. Such a *modus operandi* is likely to lead to either false conclusions or to the setting up of false premises. The basic trouble is that only the most naive of empirical methods have been used and a sound theory is lacking upon which to erect a reasonable plant to explain the numerous cultural and economic features for which independent invention and diffusion cannot be held to account.

It is thought that Early Man did not use the bow and arrow nor did he succeed in taming the dog. Whether the earliest of man used the spear thrower appears to be doubtful, for similar implements did not make their appearance in Europe until Magdalenian times. The spear thrower or dart thrower, better known to American archeologists as the atlatl, was used to propel a light shaft tipped with a sharp projectile point of stone, bone, antler, or wood. Usually one does not think of the heavier projectile points being used with this accessory but of their being attached to jabbing spear shafts, the lighter ones being hurled with the force of the entire body, the other held in the hand and used as a prod.

On the banks of the Roanoke River, in the vicinity of Clarksville, Va., there are a number of sites on old river terraces in which the solifluction has so modified the archeological deposits that the provenience of the artifacts is almost meaningless and the geological problems thus posed are perhaps more complicated than where these conditions do not exist. In every case all cultural evidence appears upon the present surface and evidence of their original cultural affiliation is most tenuous. The similarity of the artifacts and their location within well-defined areas postulate both cultural and temporal relationships in the people who made and deposited the artifacts. Since Early Man first occupied this area, physiographic changes of considerable magnitude have occurred that have affected the habitation areas of these people to the extent that these early deposits are intermingled with those of a much later period. A number of these sites were located by J. V. Howe, formerly of Jeffress, Va.

The early lithic cultures of Virginia, based primarily upon chert forms, find their counterpart in other sections of the Eastern United States, the Plains, the Southwest, and the Pacific coastal areas, each displaying its own native peculiarity and synchronism. Some areas are more encompassing than others in that forms are more flexible, numerous, and varied. If the evidence of these loose surface finds is a true indication of a basic chert industry, it must have been a vigorous and thriving one, indicating a wider spread of population over a longer period of time than was heretofore suspected or anticipated. The significance of this is to argue for greater attention to be brought to bear upon such finds, but, unfortunately in Virginia, there is neither bone nor carbon 14 material upon which to make correlations and comparisons.

Various Virginia forms appear to display certain typological analogies to some of the Old World types, but these cannot be judged to be synchronous because there is a putative age difference. This conjecture is based on a series of geological and cultural chronologies. However, whenever absolute chronologies, based upon controlled conditions, are once established, it is surmised that the presumed older Old World artifacts will probably be found to be much younger and the New World specimens to be much older, with a meeting and possible overlap of the two chronologies. It is inconceivable to the writer that Early Man in the Old World took a couple of hundred thousand years to develop and overspread Eurasia and Africa and only twenty or more thousand years to completely people the New World, and to set up various complicated linguistic families and ideologies with varying degrees of cultural advancement, in such a short time span.

In making a comparison of implements from both the Old and New Worlds, it will be noted that man's requirements were somewhat the same on both sides of the Atlantic and he depended to a great extent on large animals for subsistence. Living conditions and climate must have been pretty much alike on both continents.

> While such investigations in the New World are still in their infancy, it can already be said with assurance that no one ancient American culture in its entirety resembles any known European culture in its entirety. In addition to this failure to agree, there are some reasons for thinking that, in Late Glacial times, the respective economies of the Old and New World were so different from one another that the cultures which these diverse conditions called forth were also fundamentally unlike. That this may have been true is suggested by the greater number of edible plants, roots, tubers, seeds, and nuts which were native to America. With such a wide range of vegetal foods easily available, it is possible, if not probable, that, in favorable areas, some ancient Americans depended more upon food-gathering and less on hunting than their Old World contemporaries. This, in turn, makes it easier to understand how, in the . . . United States, we are discovering horizons considerably earlier than was formerly thought to be possible. [Gladwin, 1937, p. 134.]
>
> In view of the many observable differences between the Paleolithic cultures of the Old and New Worlds, and also between the human types, which were associated with these cultures, I venture to suggest that American archeologists shall not rely too heavily upon Old World criteria or classifications in studying our ancient cultures or physical types, and these factors be evaluated on their own merits, in the light of our own environment. [Gladwin, 1937, pp. 137–138.]

The uncertainty that withholds an outright affirmative answer to this question

> stems mostly from the lack of an accurate chronology and the residuum of doubt regarding the authenticity of most of the American finds. [Stewart, 1949, p. 145.]

At the close of the 19th century Putnam (1888, p. 424) asked a number of pertinent questions regarding Early Man in the New World which are just as unanswerable today as when first expressed. "Was he of one race on the two continents? Has he left descendants or has he passed out of existence with the mammoth and the mastodon?" At the present time, the physical remains of Early Man are usually assigned to the dolichocephalic category which are comparable to *Homo sapiens sapiens* forms found in the Old World.

It is quite conceivable that the artifacts from the various sites in the John H. Kerr Reservoir area might vary in age in spite of similar materials, patination, and workmanship. The earliest material was usually chert, to be followed by rhyolite, then quartz and quartzite, with chalcedony used only sporadically over the whole range of occupation. Patination on the various chert artifacts is exceedingly deep, bringing about not only a change physically in composition but also in coloration. At this point, is quoted a statement by Dr. William F. Foshag, geologist, U.S. National Museum:

> From the petrographic examination of the materials, some of them are manifestly very old. Practically all of the blackish cherts are so bleached and altered that they now display a pale yellowish-gray surface. The bleaching has penetrated so far that only the very central portion retains the original color. These conditions are notably shown by the various cross sections of chips and small artifacts.
>
> The great age of these specimens is beyond question. They have been bleached by long exposure to the weather and the shallow ground waters since they were worked into their present shape. This process is a very slow one, as may be seen in the natural outcrops of these rocks, which are discolored to only a shallow depth, as a rule.
>
> On the other hand, there are a few specimens in comparatively fresh condition, even on the surface. Apparently these are either less ancient or they have been imbedded in soil of a denser texture and hence have not been so fully exposed to the weather and the percolating ground waters. Such specimens are few in number. [Foshag, 1954, personal communication.]

Merrill (1913, pp. 215–216) has stated—

> that the weathering of chert, which is classified among the siliceous sedimentary rocks poor in alkalies or iron-bearing silicates, is caused mainly through disintegration in that the silica, which exists either as crystalline or chalcedonic forms, has passed into solution.

Hovey (1894, pp. 727–729) as quoted by Merrill (1913, p. 215) shows that—

> The change is evidently mainly physical, though it is more than probable that a certain amount of interstitial silica has been removed. It is, of course, possible that here, as in other forms of decomposition, extensive solution may have taken place, leaving a residue which, so far as composition is concerned, gives no clue to the changes which have occurred.

Goodman (1944, p. 416), on the other hand, suggested:

> To reconstruct history from bits of rock surely requires the most exhaustive exploitation of every possible avenue of interpretation, the fullest possible knowledge of all of the relevant variables. It is possible that certain assumptions of cultural affinity, based upon types of stone tools, might be somewhat shaken were all of the evidence in. Conversely, certain apparent divergences might prove to be more of degree than of kind. Thus an investigation of the physical properties of materials used for stone tools must be regarded as a significant sector within the area of archaeological focus, and a contribution to a body of data through which the nature of an important variable may be defined.

In most cases the artifact was formed by percussion chipping, and only rarely was pressure flaking resorted to.

It was earlier stated that, in 1945 and the years following, J. V. Howe located a number of Early Man and Archaic sites (44Mc66 to 44Mc72) within and bordering the John H. Kerr Reservoir area. He intensively collected all artifacts and other remains, giving us complete coverage of each. The locations of these were not revealed, lest they be looted before proper study could be made.

When the writer first visited in the vicinity of Clarksville, Mecklenburg County, Va., in 1947, he was shown a great deal of this material and was taken to each of these sites in turn. Mr. Howe has graciously turned over all of his material to the Survey. Some of this material has been described in earlier articles (Miller, 1947, 1948, 1949 a, 1949 b, 1950) in which a number of cultural phases of a fairly early time were indicated, which drew attention to this section of Virginia.

In 1950, seven Early Man and Archaic sites were thoroughly explored. At this time, it was found that most of the cultural material had either eroded out of context and rested upon the present surface or it was churned into the cultivated layer by plow action. Cultural remains were fairly plentiful. Whole and fragmentary projectile points, scrapers of various types, chips, and flakes, and a rare potsherd comprise the assemblage. The few sherds recovered cannot be assigned to these early horizons since they are traits of a much later cultural manifestation.

The lithic assemblage at the various sites usually covered an area roughly 200 feet in length by 50 or more feet in width. Many of these sites were fairly close to each other, and whether they represented one large site or several smaller bordering sites could not be determined. The artifact assemblages were almost identical, so separation could not be made except upon stylistic basis.

The industry indicated here is primarily a core and flake tradition wherein nonpolyhedral cores were very much in evidence, most of which were of a bluish-gray chert. Practically all the artifacts under consideration were initially fashioned by percussion. This is also true of the smaller and better made tools. Finally, pressure flaking was used not only to trim but to sharpen some of the edges. This technique accounts not only for the thinner, finer flakes but could be relied upon for some of the larger, coarser chipping which was used to smooth and thin down the faces of a number of the artifacts. The combination of these two techniques is not always predictable in the various types of artifacts. Percussion was used mostly to cast off the initial flake from unprepared cores. These flakes vary as to size and shape. From these primary flakes the various types of artifacts were manufactured. A fairly large number of unretouched flakes were used as cutting tools and quickly discarded once their cutting edges were dulled. Hundreds of chert chips along with smaller quantities of rhyolite, milky quartz, quartzite, chalcedony, and quartz crystal all attest to their choice of stone.

Projectile points of various sizes, shapes, and descriptions; and scrapers, side scrapers, thumb-nail scrapers, drills, gravers, choppers, and knives are represented in the collection. No animal bones were present in the deposit and only rarely were small fragments of *Elliptio* sp. noted. If organic materials were ever present in the deposit, all traces of this nature have disappeared.

A variety of blades were fashioned from large flakes and it is impossible to identify them as knives, choppers, scrapers, or a very crude type of projectile point. Percussion chipping was used only on one face creating an asymmetrical tool having a point or tip at one end and a straight or excurvate base at the other, the greatest width occurring about one-third the distance above the base. Most of these implements were made of chert and only a few were made of quartzite. Some were further finished by smaller secondary percussion chipping along one or more edges, while in other instances the edges were given a serrated or sinuous effect.

McCary (1946, 1947 a, 1947 b, 1947 c, 1948 a, 1948 b, 1949 a, 1949 b, 1949 c, 1950, 1951 a and b, 1952) brought out a series of articles in which he enumerated a number of fluted points from various sections of Virginia and North Carolina. In 1951 he reported on an Early Man site, the Williamson site, in Dinwiddie County, Va., describing the lithic assemblage.

The following year, John Witthoft (1952) reported on another Paleo-American site, the Shoop site, in Pennsylvania. He described the site as follows:

> If the site itself was any thinner, it would not be a site. Eleven very slightly elevated areas on the flat hilltop, often more than a hundred feet apart, and generally less than thirty feet in diameter, usually yield about a half-dozen chips of all sorts, and one or two artifacts after each cultivation. . . . This spotty distribution of material seems to represent the original nature of the site, and probably each spot represents a different camp or a separate hearth within a camp. . . . It is my opinion that this land surface has changed little in

> recent times, except for sheet-wash erosion of humus and tiny soil particles, accelerated by plowing in the past century. [Witthoft,[7] 1952, pp. 467–468.]

The majority of the Shoop tools were manufactured from Onondaga chert, a type found extensively in western New York and the Ontario Peninsula. Very few finished tools were made on the spot and most of them appear to have been transported into the area.

Witthoft (1952, p. 471) said that—

> the flints found at this site are the most weather-resistant of any used in the area. . . . Nevertheless all of the chips and tools from the site are very deeply weathered compared to any tools of the same stone known from other industries.

Recently, the Gordon Collection, the basis of the Shoop site report and now in the U.S. National Museum, cat. Nos. 402467–402547, was examined for this change in the exterior nature of the objects. Only seven specimens, cat. Nos. 402496, 402535, 402536, 402539, 402543, 402544, and 402545, showed any signs of weathering and these were very slight, except that a crude chip, cat. No. 402543, was covered with a creamy yellowish-colored coating. All of the other objects in the collection appeared as bright as though they were manufactured recently.

Contrariwise, McCary (1951 b, p. 11) reported that there was some weathering on the implements from the Williamson site that were manufactured from a "variegated chert with cream, brown, blue, and red dominating." Those manufactured from the yellow and brown chert showed little change, if any, on the exterior surface, as neither of these flints is plentiful in the area.

Two other Early Man sites from Alabama have been recently reported upon by Soday (1954) and Kleine (1953). The Quad site contains an assemblage of artifacts which resemble, in part, the Clovis, the Lindenmeier, the Parrish, and the Shoop, and other archaic material, while the site reported by Kleine not only duplicates the Quad site but reports a number of typical Sandia type 1 points.

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[7] I concur with Witthoft and his feeling toward the use of the Midwestern Taxonomic System in the Eastern Woodlands today: "I find myself using terms from this set, such as component and focus, but merely as rough levels apart from their strict classificatory sense. In the East, with only few exceptions, cultural classifications following the Midwestern Taxonomic System are not the results of application of a special technique but are the archeologist's impressionistic orderings done up in a scholastic form; the soundness of such orderings is a factor of the common sense of the archeologist, and would never result from the blind application of statistical methods to trait lists, which we so often identify with this routine of analysis. Since I am here dealing with only a few scraps out of the whole culture of a long-extinct community, I use other terms which may need clarification even though they have been in general use for some time. . . .

"I prefer to use the term 'culture' in the archeology for the total recoverable remains and traces of a set of nearly identical communities; this is a 'focus' in the Midwestern System. An Industry is a series of objects which seem to be the result of one consistent manufacturing pattern. Most cultures include a variety of industries, as a bone-tool industry, a pecked-stone industry, a pottery industry, and perhaps several chipped-stone industries. A site may have been occupied by a number of different communities at different times, and so may include several components, each of which is thought of as a unit in the archeological history. A component is the local, precisely definable unit of a culture. An assemblage is the total of objects found at a single site, and the term carries some implication of unity, although it does not necessarily mean they are to be considered as of one component. . . ." (Witthoft, 1952, pp. 464–465.)

Most of the stone used in the early sites appears to be of local origin but no definite source from which this material was drawn can be pointed out. Since the source cannot be located it is obvious that microscopic petrographic studies will have to be conducted in order to prove source identifications which, in the long run, may be of help in determining routes of migration, if possible, or to establish that trade relationships existed during this early period.

A highly siliceous bluish-gray chert is the dominant material used during this period and it accounts for the major number of artifacts. In decreasing numbers we have those manufactured from rhyolite, milky quartz, quartz crystal, quartzite, and chalcedony, all of which occur either in the reservoir proper or within easily procurable distances.

As stated earlier, the most striking characteristic of the chert artifacts is the considerable alteration in composition of the cortex surrounding an unaltered core of the original siliceous material. This cortex is usually a creamy white or a greenish gray in color, slightly softer than the original chert and less siliceous, having lost some of this quality during the change in composition and color. The degree of penetration is most striking. In a number of the thinner specimens this alteration varies from $\frac{3}{64}$ to $\frac{5}{64}$ of an inch in thickness and surrounds an unaltered core of the original chert.

> Some artifacts suggestive of early times, because of their lack of development, are sometimes greatly altered and discolored. But no one knows how long under natural circumstances it takes to alter a siliceous stone, or how long it requires for stones of the desert to acquire "desert varnish." [Carter, 1951, p. 299.]

To paraphrase Carter, the question might be raised of the altering of the cortex of chert artifacts as a time factor. Some stone artifacts suggestive of early times, because of their lack of development, are sometimes greatly altered and discolored. Apparently no one knows or will venture a guess as to just how long, under natural circumstances, it takes to alter the cortex of a siliceous stone resulting in a combination of decomposition and color changes such as have taken place in the southern Virginia and northern North Carolina chert artifacts of a definite artifactual pattern. This alteration not only has smoothed away the rough scars of chipping, but it has penetrated into the body of the artifact itself, in some cases almost entirely through the object and in others to a lesser degree depending upon the thickness of the object involved.

The task, which is not an easy one, is to try to discover, if possible, the proper placement of each general type of artifact and to insert each into its proper and correct category and sequence; if this fails, typology must be relied upon to give some indication as to supposed time placement.

It is becoming more and more apparent that a thorough examination of all broken stone and lithic artifacts be made, as they are proving crucial in determining the entire span of man's existence within the reservoir area and its environs. It is hoped that this study will ultimately throw some light, not only upon the proper placement of projectile types but upon the associated artifacts utilized by man. The writer is fully cognizant of the fact that it is most difficult to accord convincing proof regarding their antiquity when in the ground stratigraphy is lacking at the present time and there is no tie-in with extinct fauna or carbon 14 dating.

The writer feels confident, however, from the very nature of these sites in the east, that he may be able to demonstrate a certain degree of correlation of projectile types, both from the east and from proved sites of antiquity in the western section of the United States. As it now stands, he is not trying solely to indicate types of equal antiquity, but is trying for correct placement for this section of Virginia and northern North Carolina and in extending the range of specific types.

Here in southern Virginia and northern North Carolina, there are various types of preceramic sites: those that can easily be assigned to Early Man, those to the Archaic stone industry, and those belonging to the Transitional Period that separates the late Archaic from Early Woodland.

The greater part of the flake material has been studied in detail to determine, if possible, the source from which it was drawn. Of the five thousand flakes, ranging in diameter from 0.5 cm. to 8.3 cm., examined, none could be identified as coming from any special quarry area. Chert formations are known to underlie a greater part of the area, together with smaller deposits of rhyolite. Quartz and quartzite occur either as dykes or nodules in stream beds, while chalcedonies occur mostly as nodules in the stream beds. Whether the aborigines actually quarried for chert and rhyolite or were satisfied to use the various large boulders or nodules easily secured from outcrops is not known. All these materials are so common and uniform in character that they were probably derived from some local source.

These various surface concentrations of stone artifacts would indicate that we are dealing with either workshops, campsites, or primitive occupational areas of a people who chose these places for some obvious reason, which is not apparent at the present time. The artifacts themselves can be divided into three well-defined size groups, viz, microlithic, intermediate, and large. Within the whole assemblage are listed: borers, bunts, burins of various types, chisels, cores, disks, flakes, flakes with blades and nibbled edges, notched flakes, utilized flakes, flakes with graver tips, gravers or perforators, hammerstones, hand axes, picks, projectile types, recloirs, retouchers, scrapers of many different kinds and sizes, spoke shaves, and other forms. Some of these are diagnostic time markers, while others are of such ubiquitous nature that they serve no real value as such.

MICROLITHIC INDUSTRY

From an early horizon at Grassy Creek site, 44Mc53, we found a number of microlithic artifacts mixed with a heavy gravel layer that underlay an archaic deposit, and a later culture that contained pottery remains. These tools have been identified as borers, gravers, scrapers, burins, and blades (pl. 15).

Borers.—The majority of the borers are made from small, moderately thick flakes or chips which have been altered by percussion chipping into the desired shape. The borer-tip shows various types of treatment, e.g., both edges may be trimmed only on the upper face, the bulbar face, or alternately, and a few have the tip trimmed all around.

Gravers.—Gravers must not be confused with burins, for the burin is a more encompassing artifact. Practically all gravers have been fashioned from thin chips by means of pressure flaking, creating the desired working tip by retouching either the upper face, the bulbar face, or alternately on both faces.

Burins.—The term "burin" will be used in place of its somewhat equivalent "graver" since the former does not carry with it the disadvantage of suggesting the tool used only for engraving. Similar tools occur chiefly in upper paleolithic industries and are of very great importance. For a tool to be classed as a burin it is necessary that it should have at least one burin facet. Burkitt (1933, pp. 59–60) explains this by saying:

> When secondary work is done on a blade or flake, as for example, when an edge is to be trimmed, vertical blows are dealt on the edge, the flake or blade itself being held horizontally. This is invariably the case, as a moment's thought will show. In the case of a graver burin, however, a vertical blow is dealt at the point of the blade or flake down the length of the implement, which is itself held vertically. The resulting flake scar, which truncates the edge of the blade or flake, is known as the graver burin facet. Before accepting a graver as such, therefore, it is necessary to be sure that there is at least one graver burin facet present, the existence of which can be demonstrated or not according to the position on the suspected facet of the negative bulb of percussion and the surrounding rings.
>
> The classification of graver burins is a matter of some controversy. They can be classified according to type, or they can be classified according to the method of their manufacture. Neither of these systems is perfect, and indeed, the student must always remember that he is not making rules for prehistoric man, but deducing laws from facts. He is in the position of a grammarian, not the inventor of a language. Though prehistoric man certainly seems from time to

> time to have desired to make different shaped gravers in different ways, graduations between these so-called types certainly do occur, and hard and fast divisions are all very well when the selected specimens exhibited in museum series are considered, but in the field intermediate varieties are also found. . . . It depends on whether the working edge of the graver is like a screwdriver or like a gouge. Several subdivisions within each of these classes are distinguished according to the formation of the other side of the working edge, the one side of which is formed by the graver facet. Sometimes this just consists of another graver facet, in which case the working edge is formed by the intersection of two graver facets; at other times it is seen to be a trimmed edge, and so on.

Miller (1955, 1956) has stated:

> The *screwdriver* type is further subdivided into: Ordinary, Angle, and Single Blow types while the *gouge* type is broken down into: Polyhedric Angle, Single Blow, Multiple Blow, Beaked, and Flat types, all of which do not appear in the southern Virginia category. Those that do occur have been examined and classified as belonging to the ordinary *screwdriver* or "*bec-de-flûte*" type, *single faceted ordinary*, *polyhedric*, *parrot-beak* (oblique convex), and *oblique concave angle* types. Heretofore, such tools have been either overlooked, unnoticed, or not considered as part of the lithic industries of this portion of Virginia and North Carolina. This assemblage of burins must not be confused as of comparable age with European and Asiatic specimens but they can be assigned to the Paleo-American horizon.
>
> Associated with these burins are various types of projectile points, scrapers, borers or perforators, choppers, and a few cleavers or "coup-de-poings," comparable in chipping tradition to Old World Chellean-Auchellean examples. These burins or gravers occur not only on lamellar but on rough percussion flakes of chert.

The single burin from Grassy Creek site, 44Mc53, was fashioned from a lamellar chert flake 28 mm. long. A number of chips were struck from one edge, the longest of which measured 19 mm., to create the burin facet. From the opposing face a number of smaller chips were cast off to make a shorter burin facet. Along one of the long sides were a number of very fine chipping scars indicating that this tool was not only a burin but a scraper as well.

In speaking about burins, MacGowan (1950) indicated that the Magdalenians made better blades and burins than the people of the Aurignacians who started this artifact concept. "The burins helped the Magdalenians to make new implements of bone such as needles, fishhooks, harpoons, and spearthrowers." Just exactly when these tools were first conceived is unknown for "one authority puts it from 11,500 to 8,500 years ago, and another from 70,000 to 25,000." This is the fault of relative chronology based on geological estimates. He stated that "there are no burins in northern Asia or the New World," a statement which has been corrected by later studies.

Whether burins are a carryover from Magdalenian times into the New World and the artifactual concept diffused into the existing cultural groups cannot be stated with any assurance, for it is not known. So far, no burins have been reported from the Lindenmeier site, the

Sandia Cave, or from various Eden (Yuma) or Clovis sites. Whether this artifact preceded this phase of human culture in the New World and passed away before these cultures were developed or was subsequent to these cultures has not been noted in the assemblages of artifacts gathered from those sites. What is lacking, in this country, is in-the-ground stratigraphy from sites attributed to Early Man. Until such finds are made and correctly reported upon, conjecture must fulfill this aspect, but it must be taken with certain reservations.

In the light of what has been gathered from the many sites in southern Virginia the writer would venture to say that burins came in as early as the fluted point and became passé by the time this culture became fully developed, thus putting the manufacture of burins and their associated artifacts as early as the beginning of the fluted point industry.

Two microblades were found at the Grassy Creek site, 44Mc53, in association with a microlithic scraper, knife, burin, and perforator. This assemblage was found beneath a pottery-bearing stratum. A sterile stratum of river-deposited sand measuring 14 to 18 inches in thickness separated the two cultural layers. Both blades were triangular in outline, chipped from thin flakes of chert, and were formed initially by pressure chipping and later retouched with this same method all along the edges. The larger blade measured 20 mm. in length while the smaller specimen measured only slightly over 16 mm. in length. The larger point is minus one of its shoulders while the smaller is complete.

Scrapers, on the whole, are small and delicate, with the working surface or edge occurring only at one narrow end of the specimen that had been shaped by pressure chipping. The angle at which this chipping was done determined, to a certain extent, the type of the scraper. Scrapers, as a class, are characterized by being unifaced, retouched along one or more sides of the dorsal surface while the ventral surface is either flat or concave and composed of a single flake scar.

A rectangular flake of chert, 31 mm. long, 15 mm. wide, and having a maximum thickness of 4 mm., had one of its shorter squared edges finely retouched to convert it into a microlithic scraper. The opposing end was also retouched into a graver point. MacNeish (1954, p. 244) illustrated a similar tool which he attributes to Early Man.

While scrapers are much too ubiquitous to serve as horizon markers, their form has gone unchanged from Early Man periods up to late potterymaking levels. The only time one can be sure as to the cultural affiliation of any particular scraper is when it occurs in context, such as the one indicated above.

A small, ovate, unifaced micaceous schist flake, 44 mm. long, was pressure chipped along one edge to form a knife. The opposing edge was also retouched to a certain extent, while at the base of this edge there occurs a burin facet indicating that this flake functioned both as a knife and as a burin. The ventral surface is flat and unworked.

INTERMEDIATE STONE INDUSTRY

In the intermediary group not only various types of burins, borers, scrapers, cores, perforators, knives, and projectile points have been identified, but also blades of various sorts.

Borers are merely large flakes, usually of chert and rarely of rhyolite, which were shaped by pressure chipping or percussion chipping into the desired forms that were destined for this purpose. They are roughly triangular in shape, square to subconcave based, and lenticular in cross section across the perforating portion of the tool.

Burins in this class are much larger than in the microlithic industry and are characterized by their various shapes. Some appear to have been carefully fashioned while others are roughly made. Among the identifiable types are angle, bec-de-flûte, faceted angle, flat, and polyhedric. On the whole, they are more typical of the tool types than are the microblades (pls. 16–17; fig. 3).

Angle burins are comparable to types associated with the upper paleolithic varieties of the Old World and display similar methods of construction displaying tranverse or oblique retouch.

Bec-de-flûte burins may occur with either single or double working edges, viz, single-faceted or double-faceted types. Some have the working edge slightly twisted.

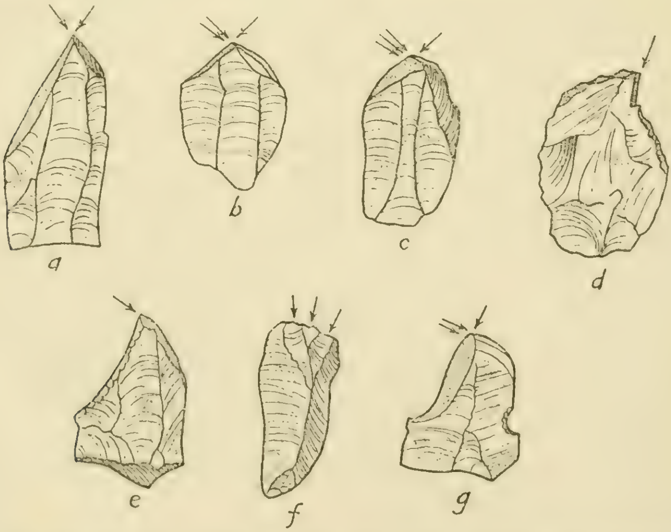


Figure 3.—Burin types: *a*, Ordinary bec-de-flûte; *b*, single faceted; *c*, polyhedric; *d*, parrot beak; *e*, oblique concave angle; *f*, flat graver; and *g*, beaked graver with side notch.

Faceted angle burins are not numerous and closely resemble a number of the polyhedric burins. The majority of these occur on broken chips or flakes of chert which were not trimmed. All are single ended.

Flat burins occur that have the facet running down the cutting edge of the flake that encroaches upon the bulbar face of the flake.

Polyhedric burins are made out of much thicker flakes of chert whose parallel facets occur on one side of the working edge and are opposed by a single facet. The workmanship is more delicate in that more attention was given to the placement of the various chips to create the burin facets.

Cores are rough and shapeless and indicate where various flakes have been struck off at random. No prepared striking platforms are visible, and the majority of the cores are of chert with rhyolite and quartz in the minority.

Racloirs, a definite type of scraper, have been identified from various Early Man sites within the reservoir area. The predominating form is an end-bulb type (figs. 4, *a*, *c*, *f;* 5, *d*) retouched on one edge only, forming either a straight or a convex side scraper. Some have been retouched on adjoining edges which are at right angles to each other. Usually these are on moderately thick flakes. Others occur on thin flakes and display definite prepared striking platforms. Some specimens have the bulb placed at one angle which classifies them as oblique-bulb types. A number have resolved flaking instead of the flat retouch, and the edges are convex rather than straight across. In the double-sided group there are the same general characteristics with an occasional variant known as the pointed end-bulb scraper.

The oblique-bulb scraper can be one sided, pointed, or elliptical and resembles similar groups in the end-bulb class. Sometimes these are retouched on three sides, but usually this occurs only on two sides. Whenever the angle is very acute (figs. 4, *e;* 5, *e*), the racloir is classed as one of the pointed types. In the right-angled type the position of the bulb varies in its relation to the retouched edges but always occurs at an angle on the flake. Usually the side-bulb type (fig. 5, *b*) is fan shaped though there are some that have a straight scraper edge; these are generally made out of thicker flakes with larger bulbs.

Scrapers, in the intermediary class (pl. 18), are much too ubiquitous as horizon markers, for most types occur not only in Early Man sites but continue through the Archaic stage and progress well into pottery-making levels. They are worldwide in distribution, and the local forms are reminiscent of corresponding implements from the typical Mesolithic times of Europe but of a much later time differential. Some forms occur only during the early cultural periods, while others have become so well adapated that they continued to be manufactured

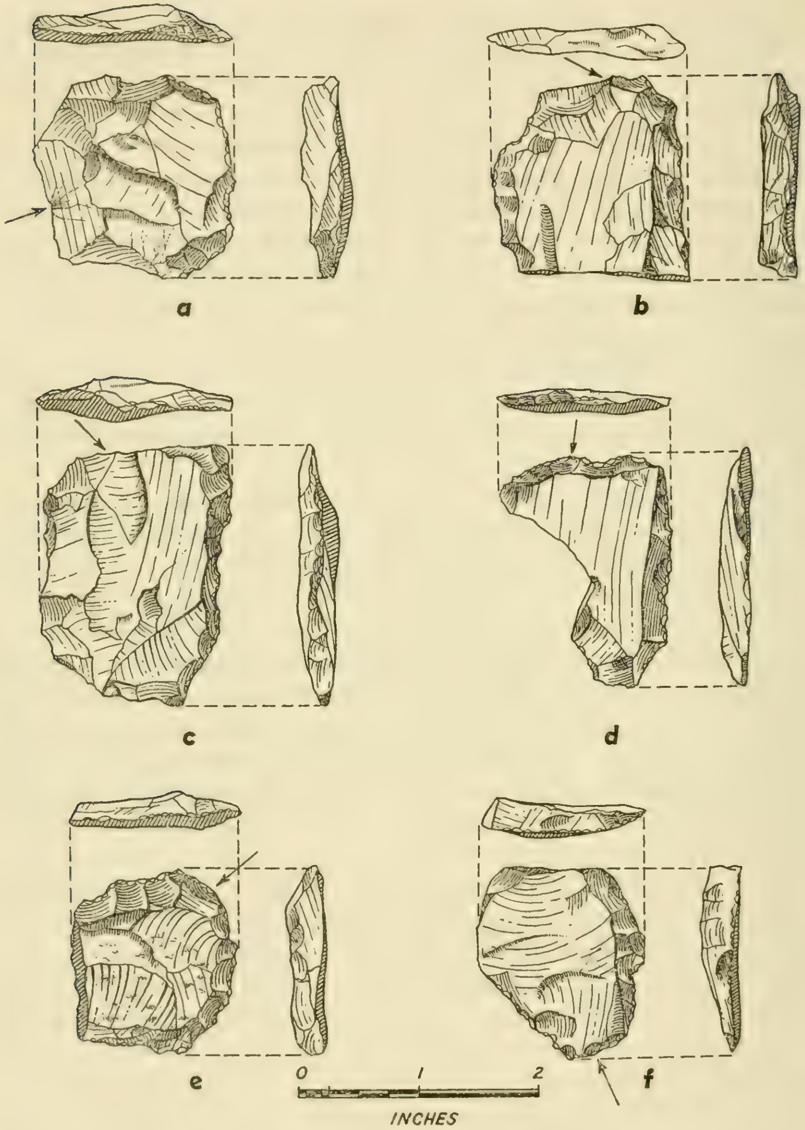


FIGURE 4.—Types of racloirs: *a*, End bulb type with acute angle; *b*, prepared striking platform; *c*, prepared striking platform on end bulb type; *d*, oblique bulb pointed; *e*, acute angle type; *f*, end bulb type. (Arrow marks the position of the bulb of percussion.)

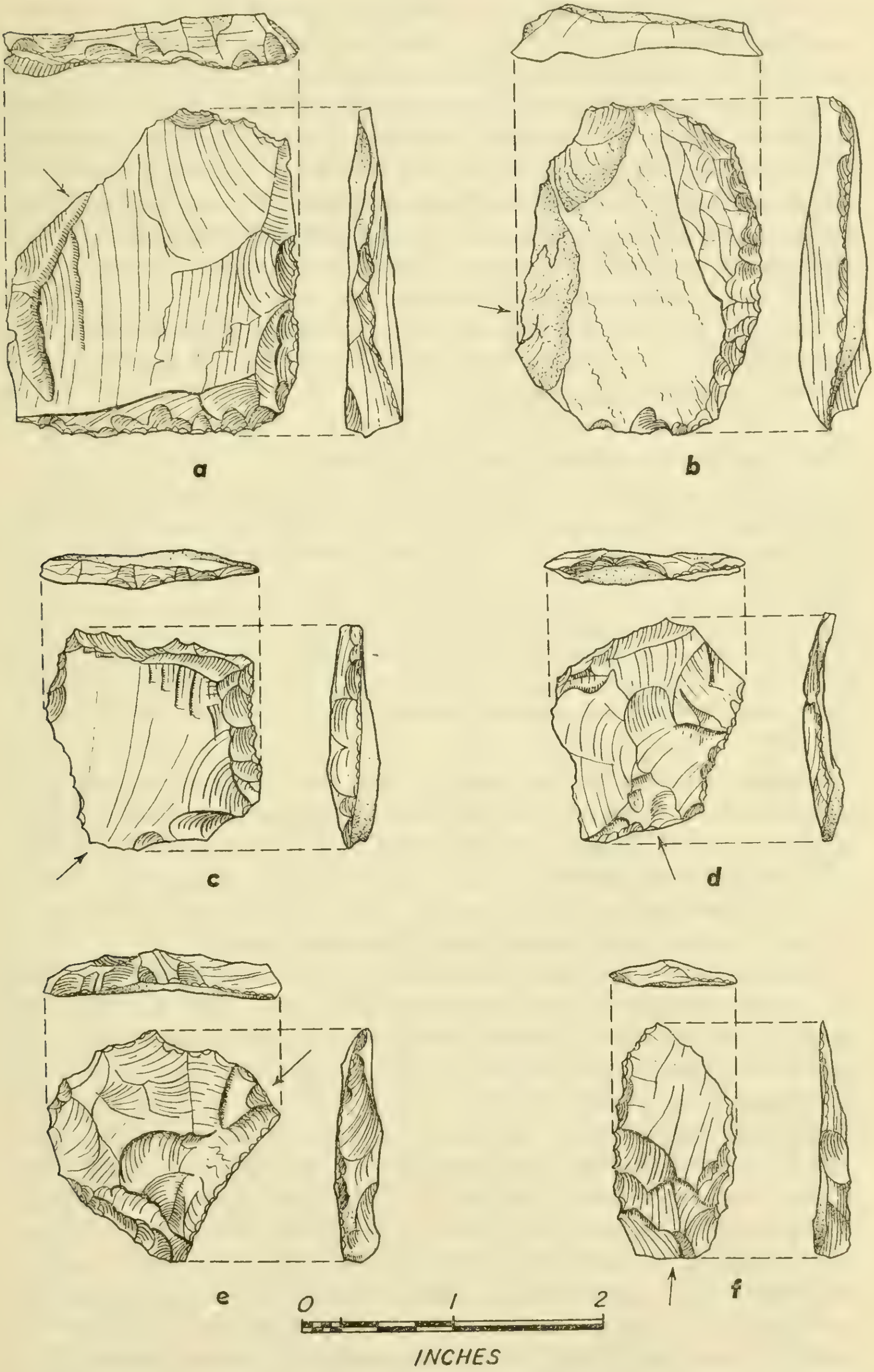


FIGURE 5.—Types of racloirs: *a*, oblique bulb pointed; *b*, side bulb; *c*, oblique bulb pointed; *d*, end bulb; *e*, acute angle with prepared striking platform; *f*, pointed end bulb type. (Arrows indicate the position of the bulb of percussion.)

over long periods of time; thus, their usefulness as "index fossils" has been destroyed. It is only when found in context that they are useful, and such instances in Virginia are exceedingly rare.

Scrapers vary both as to size and form. All are characterized by a plane or slightly curved under surface (ventral face) surmounted by a dorsal keel or flatness, displaying one or more abruptly retouched edges, and being unifaced and ovate, elliptical, lunate, subtriangular, trapeziform, or irregular in outline. Maximum thickness is not confined to any particular portion of the scraper. Wherever the "snub-nosed" end appears considerable wear is shown.

The presence of scrapers would tend to indicate certain technological knowledge of the preparation of pelts into leather goods for the manufacture of clothing and other articles.

It is my belief that Stewart's (1946, p. 45) definition of a scraper is an excellent one. He defines a scraper as:

> A primitive thing called a scraper is crude and not at all eloquent until you realize that it points to much else. It means not only a scraper, but a thing to be scraped, most likely a hide; therefore it means a growing ability to kill, to take the hide and cure it. That is just the beginning, for a scraper also shows a knowledge of how to scrape, and a desire for scraping, and enough leisure (beyond the struggle to get food) to allow time for scraping. All this means self restraint and thought for the future, and it implies a certain confidence in the ways of life, because no one would be liable to go to all the trouble of scraping if he did not have the reasonable hope of enjoying the results of his work.

Scrapers can be divided roughly into two classes, end and side scrapers. End scrapers are further subdivided into keeled, large tear-drop, small triangular steep-sided, large planoconvex, and flat. Side scrapers are subdivided into large flake, double-ended planoconvex, thick pointed, single edged flake, double edged flake, and prismatic flake (classification after MacNeish, 1954).

Most end scrapers are neatly made and occur on especially prepared flakes, the results of hinge fractures (pl. 19). The scraper end, opposite the bulb end, is neatly trimmed and one or more edges are retouched. Some are trimmed down one or more sides as well as retouched on both ends, forming a tool with either a rounded or ogival double working surface. As a rule, retouching occurs on all edges. The percussion bulb of the ventral surface indicates that flakes were utilized and purposefully struck off in the manufacture of scrapers.

One outstanding specimen is noteworthy in that well-controlled pressure chipping has been used starting along the edges and running diagonally up to a central keel covering the entire dorsal surface of the specimen. The steep snub-nosed working edge has a number of smaller retouched chips giving the scraper a keener blade. The chipping is very reminiscent of the collateral Yuma type and may or may not be equally as old. The entire surface of this particular chert specimen has been physically changed to a soft yellowish color as the result of chemical decomposition, owing to long exposure to sun and weather action. Again, this is a factor that must be taken into consideration regarding the age of this object.

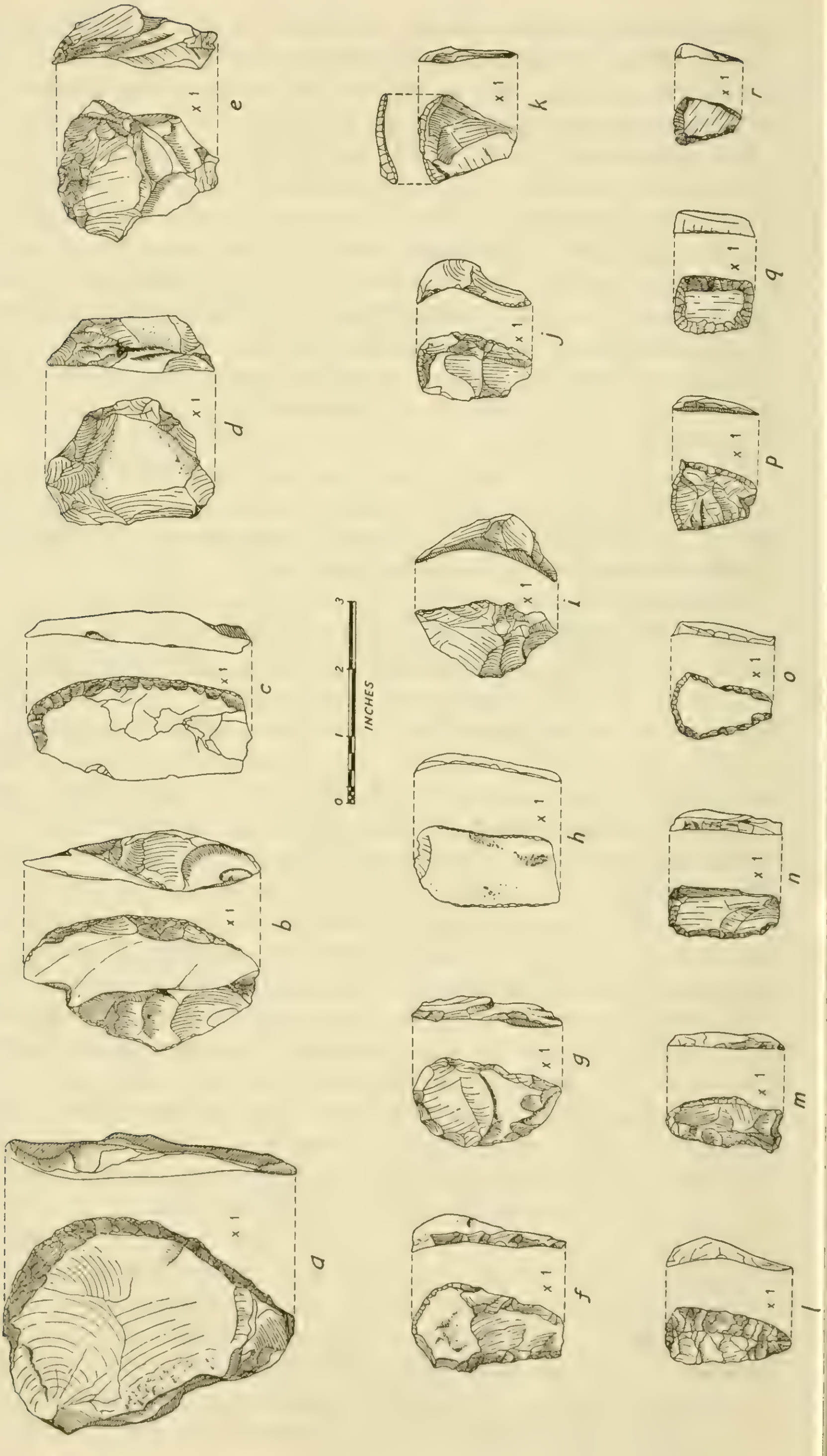
Pointed scrapers (pl. 20), as the term denotes, are broad, thin flakes of chert that have been retouched to a blunt point, not sharp enough to serve as a graver, but may have served as one type of end-side scraper. Scrapers of this type resemble certain lower Levallois types of the Mousterian and La Gravette types of the Middle Aurignacian (Garrod and Bate, 1937, p. 44). The writer suspects that they are of the most temporary nature, since they can be so easily made. Pointed side scrapers generally have the tip at the bulb end of the blade, while spurred end scrapers have the beveled surface opposite the bulb end of the blade.

Massive scrapers are considerably larger than corresponding intermediate-sized scrapers, whose working surfaces may be rather abrupt (steep) or gently sloping. The size depends strictly upon the size of the flake that was utilized in making the tool.

Snub-nosed scrapers (pl. 21) are subdivided into several subtypes, a number of which are rather small and known as thumbnail scrapers. These are usually thin to moderately thin in cross section, about the size of a man's thumbnail, round or rectangular in outline, with the working edge rather abrupt, and the chipping or retouching occurring on either the working edge or around the adjoining edges, as well as completely around the tool. Then, there are those that are roughly keystone in shape, larger than the thumbnail type, and displaying similar characteristics. Most are of the uniface, planoconvex type with the flat dorsal surface showing little or no chipping and the curved or flat ventral surface having just enough flakes removed, mostly at the end containing the bulb of percussion, to give the implement its characteristic shape. The broad end and the two adjoining edges usually bear retouching by the pressure method, whereupon the fine flaking produces the sharp scraping surfaces. Some are provided with additional graver points, which may occur as a single feature at the juncture of the broad working surface and one edge or corner, or they can occur on either corner of the scraping edge; others bear side notches or a slight stem suggesting that at one time these particular tools were hafted. This type is very rare.

Steep scrapers (pl. 22; fig. 6, *d*, *e*) usually occur on very roughly trimmed blocks or chunks of chert having one or more scraper edges, which are oblique to the base of the tool. Flaking in these tools is cruder since it is the result of percussion chipping or knapping. Usually the working edges bear additional retouch scars in the form of pressure chipping. On the whole they are rather large and most are neatly retouched only on the working end. A few are retouched

SCRAPERS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down one or both edges, while others resemble upper paleolithic core scrapers of the Old World. In addition to the usual oblique-front type, there are those that do not display this characteristic so markedly. The former are characterized by a straight working edge, while in the latter the working edge has a tendency to be either rounded or ogival. Scrapers of this type have been initially formed by a number of large percussion flakes, shallow in trough, running toward a flattened or deliberately rounded-off dome. These large flakes have been well controlled. On some specimens the ventral surfaces bear only an occasional chipping scar which is very shallow and only intrudes for a short distance from the edge. Usually this feature is absent. This tool suggests an implement that was used whenever an all-round scraping edge was desired.

Round scrapers (pl. 20, *c*, *g*, *h*) occur on moderately thick, nearly circular flakes or on purposely chipped circular flakes. As a rule, the edges are retouched with fine chipping, but occasionally some occur with only a part of their circumference so treated. Scrapers of this type have been initially formed by a number of large percussion flakes, shallow in trough, running toward a flattened or deliberately rounded-off dome. These large flakes have been well controlled. On some of the specimens the ventral surfaces bear only an occasional chipping scar, which is very shallow and only intrudes for a short distance from the edge. Usually this feature is absent. This tool suggests an implement that was used whenever an all-round scraping edge was desired. This group, though small, contains some very good specimens. All are made of chert.

Ovate scrapers (pl. 23, *a*, *b;* fig. 6, *g*) are ventrally flat and dorsally keeled. There is percussion flaking along their dorsal edges tending toward a flattened rounded keel and retouching around three-fourths of their circumference, leaving only one-fourth untouched by finer chipping. Widths range from 32 mm. to 39 mm. and thickness varies from 6 mm. to 7 mm.

Keeled scrapers (pl. 24, *b*, *d*, *e*, *f;* fig. 6, *l*) are made from thick flakes whose ventral surfaces may be either concave or flat and whose dorsal surfaces may terminate in either a sharp or steep keel formed by a fairly uniform placement of percussion flakes terminating near a central peak or keel. Percussion flakes start at the lower edge and extend upward toward the central cone. Along the working edge a number of secondary flakes have been cast off giving the object a steeper beveled surface. After this a third set of chips, much finer and smaller, was made to even the cutting edge somewhat and to give a keener blade. With their smooth bulbar faces and their steeply rising sides they have an apparent adaptability to skin fleshing. Whether this was their primary purpose cannot be determined, for they could just as easily have served as woodworking tools where a smooth surface was desired. One end is rounded and steep and shows careful retouching, while other sides taper toward a pointed or squared base. They range in size from 19 mm. to 39 mm. in length; 15 mm. to 42 mm. in width; and 8 mm. to 17 mm. in thickness.

Trapeziform end scrapers (pl. 21, *g;* fig. 6, *k*, *p*) are slightly concave ventrally with flat dorsal surfaces. Most specimens have rather steep edges fashioned by pressure chipping, but percussion chipping does occur on some. They are trapezoidal in shape, and their wider ends may be moderately rounded to rounded, while the lateral edges tend to converge to a flattened or rounded butt. All display very fine retouching. One specimen bears a number of well-controlled oblique chip scars across the whole of the dorsal surface, which are exceedingly shallow. These have not only reduced the thickness of the tool but tended to flatten the dorsal surface. A number of scrapers in this class have an extra accessory in that graver tips occur on either side of the working surface or on a single side. Length varies from 31 mm. to 37 mm.; maximum width from 25 mm. to 35 mm.; and thickness from 5 mm. to 7 mm.

Keeled scrapers and trapeziform scrapers have been associated with the Aurignacian of Europe (Burkitt, Solas, and other European authorities). Those found in southern Virginia could well fit into the Old World assemblage without being out of place as far as shape and form are concerned. In the American keeled scrapers there is a close association with early food-gathering-hunting groups, as well as with later cultures where hunting is one of their main cultural traits, and with this in mind we cannot use such implements as cultural markers.

Triangular steep-sided end scrapers (fig. 6, *f*, *r*, *o*) occur whose ventral surfaces are either flat or slightly concave, while the dorsal surfaces are moderately flat to slightly keeled. The lateral edges have been steeply retouched, making the whole roughly triangular in shape. Specimens range in length from 22 mm. to 58 mm.; in width from 16 mm. to 33 mm.; and in thickness from 7 mm. to 8 mm.

The ventral surface of the teardrop-shaped scrapers (fig. 6, *j*) is exceedingly concave, while the excurvate dorsal surfaces have been chipped into steep-sided, rounded keellike domes. The lateral edges are slightly excurvate and finely retouched. Specimens range in length from 42 mm. to 44 mm.; in width from 26 mm. to 29 mm.; and in thickness from 8 mm. to 11 mm.

Rectangular steep-sided end scrapers (fig. 6, *q*) are ventrally flat to slightly incurvate while the dorsal surface is either vertically flat or retreats toward one of the lateral edges making the scraper resemble a slightly round-cornered right-angle triangle in cross section. Opposing edges approximate the parallel and have been steeply retouched up to the dorsal surface. Such tools present four working surfaces. They range in length from 29 mm. to 56 mm.; in width from 19 mm. to 25 mm.; and in thickness from 7 mm. to 12 mm.

Peaked and scrapers (fig. 6, *i*) are flat ventrally and rise through pressure chipping to a dorsal peak ranging in height from 12 mm. to 18 mm. They vary in outline from an oblong, to lunate, to annular, to slightly ovate and bear fine retouching along their edges. On the lunate-shaped specimen, at the juncture of two working edges, there is a graver point that is still rather pronounced. Lengths vary from 38 mm. to 43 mm. and widths from 27 mm. to 36 mm.

Lingulate-shaped scrapers (fig. 6, *m*) are represented by a single specimen. It was formed from a moderately thick lamellar flake whose ventral surface is flat and smoothed and whose dorsal surface slants slightly to the right, while the edges have been steeply retouched along three sides leaving the base square and the tip rounded. On either side are wide grooves, the one on the right measures 13 mm. across while the left-hand groove measures 16 mm. across. From these grooves one would surmise that this instrument was hafted at one time. It measures 43 mm. in length, 19 mm. in width, and 6 mm. in thickness.

Large planoconvex scrapers (fig. 6, *b*, *c*) are made from large chert flakes as well as nodules of quartz. The latter are scarce while the former are fairly plentiful. A single quartzite scraper of this type is in the collection. All ventral surfaces are flat or nearly so. All are rather thick in cross section and their dorsal surfaces are either flat, keeled, convex, or dome shaped. In most specimens the edges have been steeply chipped by means of percussion and later finely retouched. This retouching completely encircled the ventral edge; occurred along one end and one side; occurred on two edges and one end; or was present only on the usable end of the tool. The large percussion flake scars were never completely eradicated by the later retouching and in some cases the cutting edge had a serrated appearance. The chert tools vary in length from 54 mm. to 85 mm., in width from 44 mm. to 56 mm., and in thickness from 16 mm. to 25 mm. Those made of quartz measure 53 mm. to 63 mm. in length, 36 mm. to 45 mm. in width, and 19 mm. to 21 mm. in thickness. The lone quartzite specimen measures 84 mm. in length, 38 mm. in maximum width, and 14 mm. in thickness. All of the chert specimens are very heavily patinated.

Formerly *lunate scrapers* have been reported from Solutrean deposits in Iran which approximate Old World specimens so completely that if placed with other specimens out of this context could not be easily separated from them. The two heavily patinated Virginia chert specimens (fig. 7) have been so classified, but are not represented as being of comparable age to those secured from Old World sites. The chipping scars of one of the Virginia specimens have been so considerably smoothed through usage and possible erosion that a

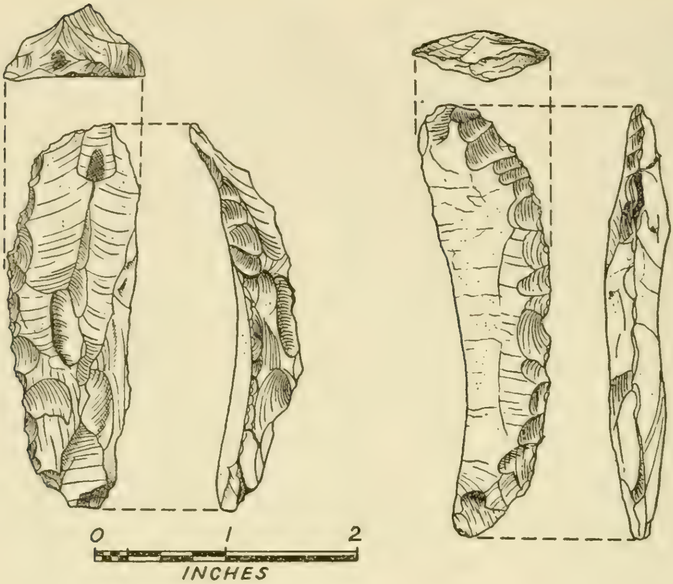


Figure 7.—Planoconvex and lunate scrapers.

great age appears to be the only possible way of explaining the condition, while the other specimen, though of clearer definition, has more distinct and sharper chipping scars. Tools of this classification are combination tools in that they could be used either as end or side scrapers. The fresher appearing specimens have a graver tip at one end which appears to have resulted from later rechipping. Lengths vary from 74 mm. to 84 mm., widths from 20 mm. to 25 mm., and thickness from 10 mm. to 14 mm.

A number of pentagonal side scrapers have graver tips while the remainder lack this feature. All occur on moderately thin, 6-mm. to 8-mm. flakes that were cast off from a core and later retouched along one or more edges. All were made from a bluish-green to bluish-black chert. The one exception was made from a flesh-colored rhyolite flake which, at the present time, is badly weathered.

A single *semicircular scraper* (figs. 6, *a;* 8), was made out of an extra large, broad chert flake, 108 mm. long, 80 mm. across its widest section, and 14 mm. thick (pl. 9, *h*). The edges were first pressure-chipped with rather broad sections being cast off; later the working edge was retouched with much finer chipping, which sharpened the blade section of the tool. Opposite the bulb of percussion of the flake, there is an indentation equal in depth to the height of the bulb of percussion. This slight depression just naturally fits the thumb of the left hand and is on the correct side of the beveled blade. Scrapers of this class do not occur regularly and when found they always ap-

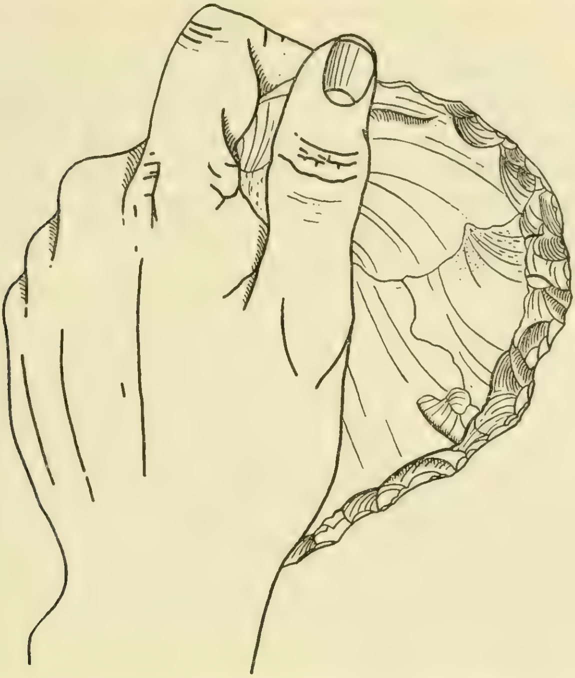


FIGURE 8.—Left-handed scraper held as it should be used.

pear in association with other lithic artifacts attributable to early hunting industries.

Single-edged flake scrapers are made from various sized, thin flakes and usually of chert. Only one of the dorsal edges is retouched, while the ventral surfaces range from flat or straight to slightly concave.

Double-edged flake scrapers resemble the single-edged class with the exception that retouching occurs along the two opposing dorsal edges and the size of the flake is much larger, as a rule. In most instances, work is performed only on the fundamental working surfaces but there are a few exceptions and these show that a certain amount of labor was expended to bring the flake into the desired shape before the scraping surface was worked upon.

Pointed side scrapers were made from large to medium-sized flakes of chert whose dorsal surface displays the bulb of percussion created in casting off the flake from a core.

Many of the ubiquitous prismatic flakes show exceedingly fine chipping along one or more of the dorsal edges. This chipping is probably not the result of intentional or purposeful chipping but may be the result of momentarily using fresh sharp-edged flakes as cutting instruments, which are discarded when either the job is done or the edges become too dull to cut.

Rough flake side scrapers are, as a rule, simple, formless, broad flakes with one or more edges retouched or chipped to create a temporary tool. The size of the tool depends directly upon the size of the flake that was chosen to be used. In some instances all of the edges received either chipping or retouching to complete the type of tool desired, while in other cases only sections of a single edge may have received this treatment. A number of the small, irregular-shaped flakes were so chipped as to create a serrated edged tool, one that looks as though the edges have been nibbled.

Concave scrapers, sometimes spoken of as "spokeshaves" (pl. 25, *a*, *b*, *f*, *g*, *k*), have one or more concave-shaped working surfaces. They are of no definite form, and many a thin flake as it was struck from a core may have received an edge that is slightly concave. Flakes of this type were taken, the dent increased, and the edges chipped or retouched to make a scraper of this type. Similar artifacts have not only been found in the Folsom industry but they occur as well in the Lake Mohave industry. Strong recorded identical tools from Signal Butte, while other students have recorded them as occurring in Early Man and archaic sites as well. Blades of this type are found not only in Early Man and archaic sites but they appear in later cultural horizons as well.

Roberts (1936 a, p. 24) noted what he called—

> A curious implement, the only one of its kind thus far found at the [Lindenmeier] site, is one which can be termed a core scraper (fig. 4). It was made from a small core, not from a flake as were the majority of the tools. The long, slender facets where chips were removed in the shaping process show that the maker was possessed of great skill. Whether the object was the product of a bit of experimental work or belongs to a definite, although minor, type is a question which can be answered only by additional digging. If no other examples are found in a comparable series of specimens, it unquestionably should be considered unique. Core scrapers have been found in parts of Alaska and in some sections of Siberia. This implement is not correlative to the types from those places, however, and it may be that in the last analysis it should be regarded as an aberrant form of an end scraper or "snub-nosed" scraper.

Earlier, de Mortillet (1881, pl. 45, No. 412) illustrated a larger and better-made specimen of this same artifact, which he termed: "Ecrasoir ou retouchoir." Just how these were supposed to have been used was not explained in the text.

During our survey and excavation of several sites in the John H. Kerr Reservoir area, similar objects (pl. 47; p. 129), field specimens Nos. 1238, 1751, 1783, 1784 (fig. 9), were recovered. All were fashioned from what might have been cores or thick flakes whose entire surfaces were completely worked into shape typical of the objects described and illustrated by Roberts and de Mortillet. These objects are oval in outline, lenticular in cross section, and very finely chipped

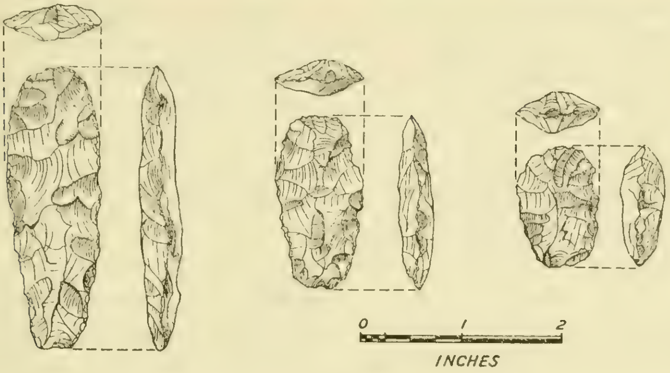


FIGURE 9.—Chippers or "Ecrasoir ou retouchoirs" (after de Mortillet, 1881).

as though the maker understood both his technique and the quality of the stone being worked upon. Four distinct sizes were recovered. The largest specimen measures 70 mm. in length, 24 mm. in maximum width, and 11 mm. in thickness. The other three measured 49 mm., 43 mm., and 29 mm. in length respectively; 23 mm., 21 mm., and 20 mm. in width respectively; and 10 mm., 10 mm., and 10 mm. in thickness respectively. It will be noted that the thickness of all four was practically uniform, being around 10 mm. Widths seemed to be pretty well standardized, being between 21 and 22 mm. The only real variant occurs in the length factor. Three of these objects were made out of chert, while the fourth was made out of rhyolite. (For further discussion see "Flaking tools" in this report pp. 95–96.)

In the manufacture of snub-nosed scrapers a number of moderately thick and flat trigonal flakes, the results of hinge fractures, were first struck from a core. These flakes constitute the basic form out of which scrapers were fashioned. To convert these trigonal flakes into scrapers, the hinge joint, which is at the widest lateral edge, would have to be properly chipped, starting with the edge closest to the ventral surface and chipping at an obtuse angle toward the dorsal surface to create an edge capable of scraping. If chipping is only applied to this particular surface, a cutting edge is produced that may be given greater keenness by additional retouching. This form is usually and roughly triangular in cross section and outline. Another form, similar to the former, can be made by working all lateral edges and blunting the basal tip so that it is more trapezoidal in cross section. Still another form would result by the formation of a "graver tip or tips" adjoining the scraper edge and a side, a form known as a "spurred" scraper. Variations between these basic forms will result in a number of subforms.

An ovate bifaced chert tool with a thinned, slightly concave base can be classed either as a type of scraper or as a bunt. From the appearance of the tool and its unusual base, it can be assumed that this object was once hafted, but we are not certain of this. This tool measures 41 mm. in greatest length, 26 mm. across the widest portion, which is 5 mm. from the beveled cutting edge, 10 mm. across the concave base, 4 mm. in thickness at the base, and 9 mm. in thickness at the thickest portion of the blade.

This object, once a triangular-shaped flake, as shown by the flake scar on one surface, was later fashioned by a combination of chipping and retouching into its present shape. Over the years, since it was last used, it has acquired a deep patination and the chipping and flaking scars have been softened so that they are not quite as noticeable as they must have been when the artifact was new.

Gravers, comparable to the types reported from the Lindenmeier site in northern Colorado, occur not only as attachments to scrapers but also as singular tools. Most of these tips are small in size, blunt to sharp of point, triangular to diamond shaped in cross section, and formed by delicately chipping away the lateral sides and leaving untouched a flat basal section (pl. 26, *b*, *c*, *d*, *g*, *h*). Graver tips usually occur in chert forms in which the flakes are much larger than those associated with the microlithic industry of the Grassy Creek site, 44Mc53. It is not unusual for two or more graver tips to occur on the same flake or tool.

A number of *drills* (pl. 27) and/or perforators, made of coarse and nontranslucent stones, consist of 10 chert, 4 rhyolite, and 3 quartzite specimens. Of the 17 specimens recovered 5 have expanded bases, 6 have bases that are elliptical in outline, 4 have winged bases, 1 has a bifurcated base, and 1 has an expanded, side-notched, rounded base.

In the expanded based forms, there are two chert, two quartzite, and one rhyolite specimens. With the exception of one of the quartzite specimens, all have been made from relatively flat flakes. The exception has been flaked rather carefully so that the elongated base is elliptical in cross section as the result of rather carefully placed collateral chipping, which has formed a semismoothed ridge down the central portion on either side. The blade portion of all specimens was reduced rather abruptly to the semiblunt tip.

The six elliptical specimens are, as a group, not very well made. Four of these objects were made of chert, while the remaining two were fashioned from rhyolite. Of this group four were made by percussion flaking, while the remaining two were pressure chipped. As a class they are fairly uniform as to shape and size: lengths vary from 31 mm. to 45 mm., widths from 11 mm. to 16 mm., and thickness from 7 mm. to 11 mm. The best made specimen in the lot was recovered from site 44Mc74 and displays very carefully placed collateral pressure chipping ending in ridges down the central portions of the two sides and more or less parallel to the edges. The base of this specimen is squared.

Two of the winged specimens are chert, one is quartzite, and the other is rhyolite. Whether these are truly drills, perforators, or a peculiar type of projectile point could not be determined. All of them share a common characteristic in that they have converging side projections that separate the blade from the stem, giving the instrument a sort of winged effect and terminating in either a flat or slightly rounded base. Lengths vary from 30 mm. to 64 mm., thickness from 9 mm. to 11 mm.

Only the basal portion of the chert bifurcated-based specimen was recovered. This is thin, 5 mm., and has been shaped by means of pressure chipping. It has undergone a certain amount of surface alteration through decomposition of the silicate in the original stone, which can readily be seen where the blade was separated from the stem portion. The break must have happened rather recently for the inner cortex does not display any alteration.

This same can be said about the expanded, side-notched, rounded-based specimen. Only a 4-mm. piece of the blade is present. While this specimen has a certain look of the Southern Cult about it, a sort of mace-shape, it is doubtful if it were ever associated with this religious rite, since it is much too early in time. The gray quartzite has responded to a certain amount of patination in that there is a slight crust of carbonate present over the entire section of the surface with the exception of the broken surface between the blade and basal portions.

Another drill-like object of light gray quartzite has a short, blunt shank protruding from an irregularly shaped flake that has been chipped along the thinner edges adjoining one face. Certain sections appear to have functioned as a scraping edge.

Spoke-shaves or draw-knives (pl. 28, *a*, *b*, *c*, *d;* fig. 10, *b–e*) were made by chipping a concave notch from the sides of various prismatic flakes. The working edges, carefully retouched at an obtuse angle to the base of the flake, formed an ideal tool by which the shafts of their darts could be smoothed. Supposedly, these tools were put to many other uses, which can only be conjectured. Widths and depths of these working surfaces are variable as to size.

Knives vary according to the size of the flake used (pl. 29; fig. 11). Usually these were made from fairly large, flat chert flakes that were carefully trimmed first by percussion chipping and later retouched

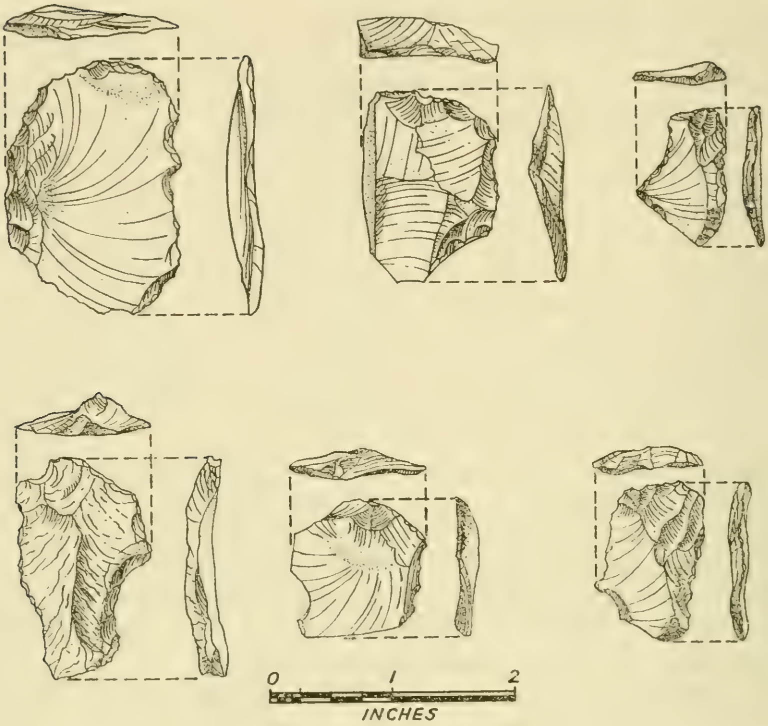
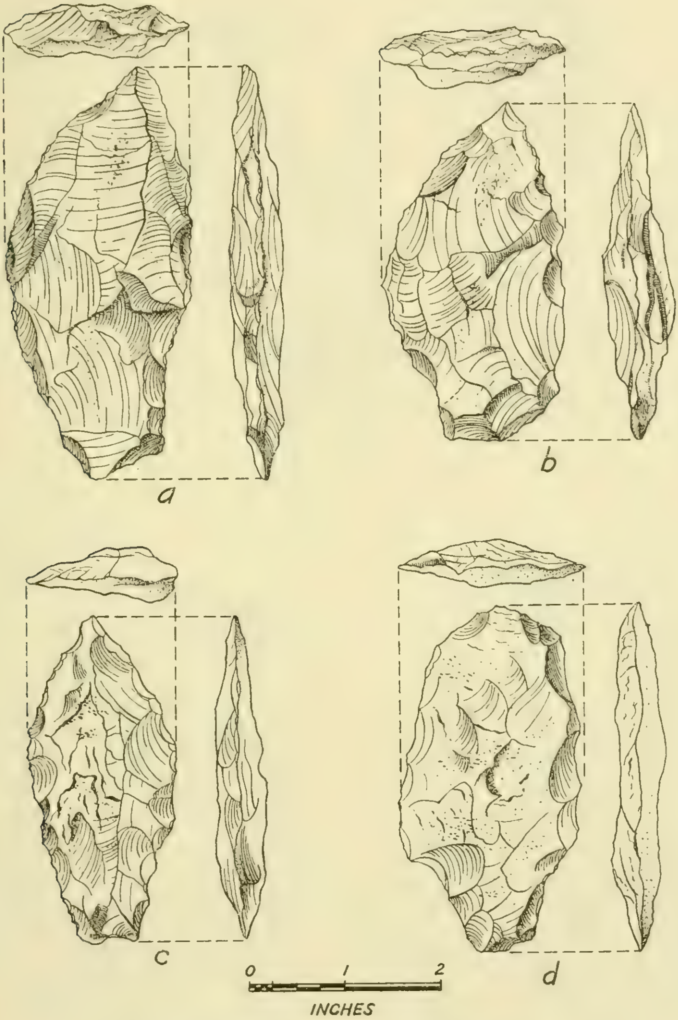


Figure 10.—Gravers and spoke shaves.

by pressure flaking, forming an acute long-tapering beveled cutting tool. Also occurring are smaller knives (fig. 12), which have been carelessly retouched, forming cruder artifacts not only as to cutting edge but also as to outline. Both types of knives show that they were put to use. It is speculated that the larger knives were probably used in skinning and cutting up the carcasses of large animals, while the smaller ones are much too delicate for this heavy type of work.

A number of broad, leaf-shaped, bifaced blades with rather blunt points and broad convex bases are included in the assemblage. Workmanship is not of the best, but they are definitely intended as finished tools. Such tools were made by casting off large flakes to give the general shape to the implement, and some were further retouched to add keenness to the edge, but the latter are in the minority.

Hand axes, of the true core type (fig. 13), formed by the intersection of transversely struck (tranchet) flakes along both faces accompanied by smaller retouched flakes to produce a cutting edge, resemble in technique and outline similar objects from the Chellean and Mousterian of Europe (*see* Moir, 1927, fig. 36, p. 89), but there is no corresponding parallelism as to time in the Virginia specimens.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INCHES

FIGURE 11.—Various types of stone knives.

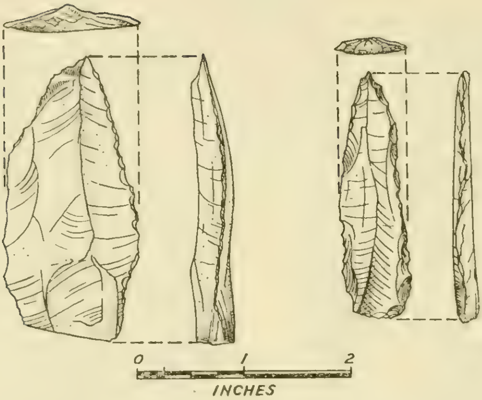


Figure 12.—Assortment of knife blades.

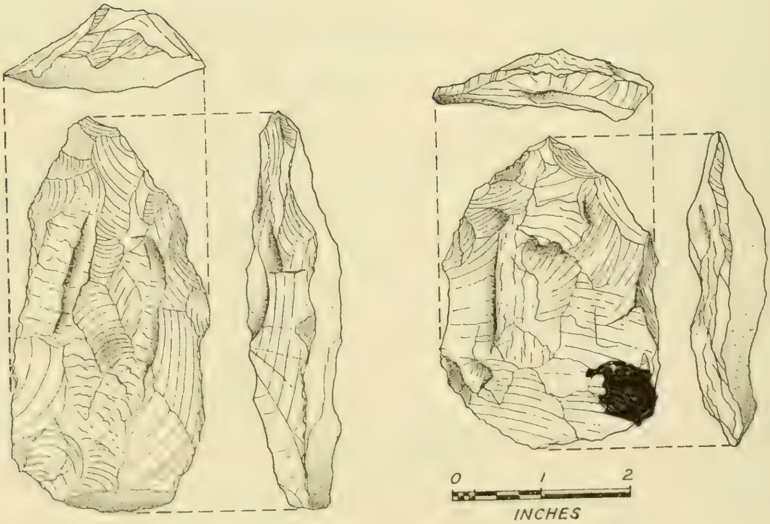
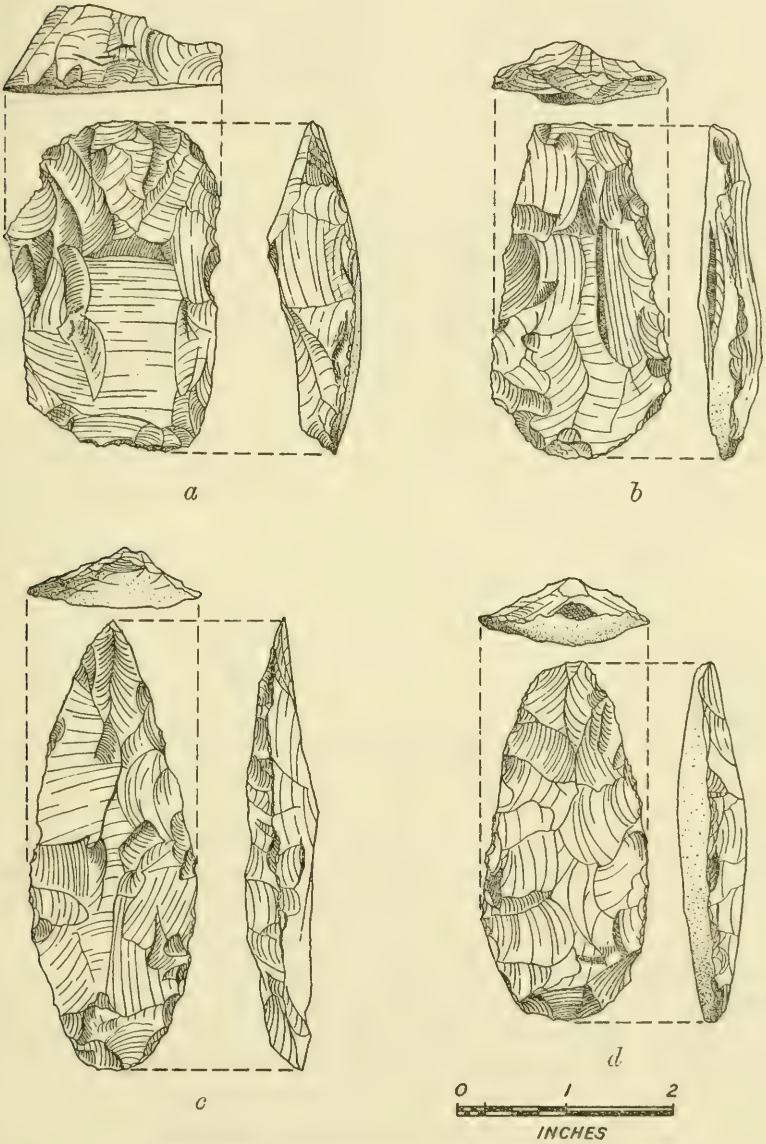


Figure 13.—Large heavy choppers.


a
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INCHES

Figure 14.—Hand axes of chert and rhyolite.

A small rhyolite ax (fig. 14, *d*), displaying an even outline as the result of extra fine retouching, has a rounded blade which slopes upward along convex sides to terminate in a somewhat dulled pointed butt. Flake size is fairly large and uniform due to the percussion techniques used to blank out the implement, while pressure chipping was used chiefly along the edges. The cutting edge is more characteristic of an adz than an ax. This ax measures 121 mm. in length, 60 mm. in maximum width—which is slightly off center and closer to the cutting surface—and 25 mm. in thickness.

There is another chert ax in the collection that has a squarish cutting edge rather than the usual rounded edge (fig. 14, *a*). It was initially roughed into shape by percussion chipping and later retouched on sides and edges, giving the object a finished look. In overall size this is the smallest of the axes in the collection. It might be termed a chopper, for it measures 98 mm. in length, 63 mm. in width, and 22 mm. in thickness.

Within the same size range is a quartz specimen, 113 mm. long, 57 mm. wide, and 27 mm. thick. The same techniques were expended upon this tool resulting in an ovate blade with a pointed butt and rounded cutting surface.

A number of smaller specimens, while not of the true core type, were manufactured from rather large thick chert flakes. In some instances the original surfaces of the stone are still visible. Techniques of chipping, as well as general form, resemble the larger specimens and differ only in that the chipping, as a rule, is better controlled, resulting in an even outline and cutting edge.

The larger of these smaller specimens must have measured approximately 110 mm. in length before its butt was broken off. At the present time only 78 mm. of its length is intact. Width is 44 mm., and thickness is 14 mm. The sides are straight and converge to a bluntly pointed butt, the tool resembling an equilateral triangle in general outline, while the cutting edge, 16 mm. in extent, is formed by rounding off the base of the triangular body.

Another specimen, with convex sides, rounded blade, and dully pointed tip, has one surface that has been formed by parallel transverse flakes which carry completely across the specimen's surface, while those on the reverse side do not extend quite so far. The exterior margin of one face was retouched while in the margin on the obverse face the chipping is much larger and irregular, and no retouching was used to refine the edge. This particular specimen measures 105 mm. in length, 40 mm. in width, and 15 mm. in maximum thickness. It is covered with a thin veneer of patination.

Another specimen resembles the one just described but is much better made. It is heavily patinated, which can be detected where part of the butt is missing. The transverse flaking used carries to a midline forming a gentle curve, while the cutting edge has been given additional chipping which results in a distinct beveled edge. Only a portion of the adjoining edges received secondary retouching. On the reverse face, only about half of the surface was treated to bring the original flake into the shape desired. The rest of the surface shows the original flake scar. This implement is lenticular in shape and in cross section and is one of the better made of the small implements. It measures 90 mm. in length, 39 mm. in width, and 15 mm. in maximum thickness.

Stone discoidals are notable for their scarcity. One fine example, measuring 66 mm. in diameter and forming almost a true circle, was recovered from 44Mc66. It measures 47 mm. through its thickest section, and both the lateral sides and the top and bottom sections are slightly convex with no sharp junctures where these sections meet. All surfaces have been carefully pecked into shape, probably in preparation for being ground and smoothed. Near the top of the side there is a small chip missing, which occurred long before the object was found by the survey.

It is not the purpose of this paper to enter into the details as to the probable use of the sling among the early aboriginal settlers of this part of Virginia, but it is desirable to indicate its possible use among the people of the early groups.

Two different types of slings have been in use since early times, viz, stick slings and ribbon or strap slings. A stick sling consists of a stick or rod split for a short distance down one end forming a cleft into which is inserted a sling stone. The elasticity of the two halves of the stick holds the sling stone in position until the proper moment for its release. The ribbon or strap sling consists of a central receptacle for the stone with strings or straps on either side. Probably the oldest ribbon sling yet discovered came from the late settlement of Cortaillod in Europe and consists of a neatly plaited or knitted flax cup or strap of the sling, together with a portion of a flax cord still attached.

Literature mentions that a few of the Indians, at the time of the arrival of the first white man, made use of slings. Cabeza de Vaca and his companions of the Narvaez expedition, while passing along the Gulf coast near Pensacola and Mobile Bay, were attacked by Indians carrying both slings and darts. Narvaez was wounded in the face with a thrown stone, presumably from a sling.

> The only other reference to a sling that has been brought to my attention is by Hawkins, who cites the case of an unintentional murder committed by a Creek boy upon his companion when they were out "playing and slinging stones. One of them let slip his sling, the stone flew back and killed his companion" (Hawkins, 1848, p. 342). This happened, however, toward the close of the eighteenth century, and the sling used might have been of white origin. [Swanton, 1946, p. 587.]

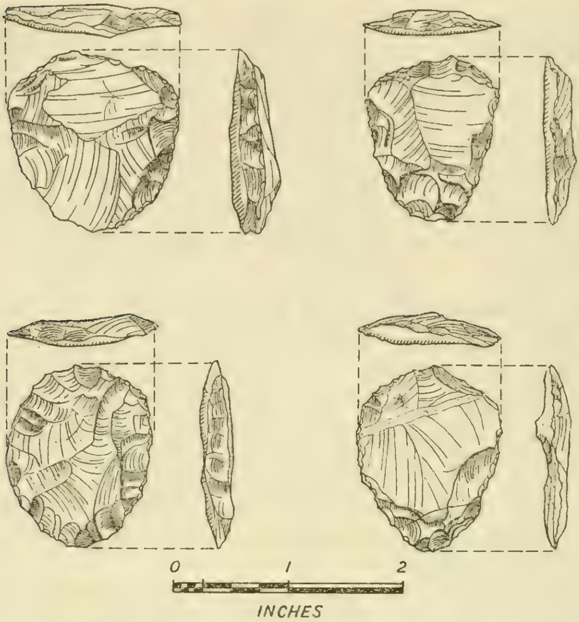

Figure 15.—Patella-shaped sling stones.

A few of the larger flakes of chert and rhyolite have been converted into bifacially chipped disks (pl. 30). Percussion flaking has rounded and thinned down these flakes into this form and their uses are problematical. In most cases there has been no additional retouching of the edges, so that they could as easily have served as small choppers, but this is doubtful. There is some variation as to overall size but most are oval in general outline. The longest and largest of these specimens measure 73 mm. in length, 49 mm. in width, and 16 mm. in maximum thickness; the widest example measures 69 mm. in length, 57 mm. in width, and 17 mm. in thickness; the smallest measures 55 mm. in length, 37 mm. in width, and 11 mm. in thickness.

Then, too, there are a number of smaller chert disks that have the configuration of the human patella (fig. 15). All are bifaced and were trimmed by means of percussion flaking. Four good examples are represented in the collection. Some have additional retouching on only one face. Whether they were multipurpose tools, such as scrapers, knives, etc., cannot be determined. The largest specimen in the group measures 39 mm. in greatest diameter, 38 mm. in greatest width, and 9 mm. in maximum thickness, while the smallest measures 35 mm. in greatest diameter, 30 mm. in greatest width, and 6 mm. in maximum thickness.

These stones have been tentatively identified as being "sling-stones" (Evans, 1897, fig. 350, pp. 417–420). Flat edged stones, such as these, have been utilized with both the staff sling and the leather or ribbon sling. Whether it can be assumed that the early hunters of this section of the East possessed either the staff or the leather sling is certainly provocative.

Whether these incidents represent the terminal phases of the use of slings is not known, for they have received very little mention in the various accounts of the early travelers.

Slingstones are more or less roughly chipped, are approximately lenticular in cross section, and vary somewhat in thickness, and range from 1½ to 3 inches in diameter. The contour is more circular or oval, and the faces vary in degree of chipping.

It is impossible, however, to say with any degree of certainty that such stones were undoubtedly sling stones. They may have served another purpose. Many may be merely cores from which flakes have been struck, reducing both surfaces so that the end product resembles what has been termed "sling stones." Whenever the term is used it must be taken with reserve for the real purpose these stones served is doubtful.

The slingstones described from the sites on the Roanoke were not in association with any white man's artifacts, hence they would have to be much earlier in time. It is my supposition that these stones were either manufactured during the Archaic or paleo-American times.

A number of choppers (pl. 31) were formed from rather large flat flakes, being altered only sufficiently along one or more edges by percussion flaking to serve this purpose. Most are crudely chipped and show that very little effort was expended to create such objects.

A large thin section of banded slate had been chipped along one edge into a number of large, teethlike projections. This tool, for want of a better term, has been called a saw, a purpose for which this implement is well qualified. It is ovate in general outline and the basal section may or may not been hafted, since there is a certain amount of reduction in the size of the instrument at this point. In overall measurement, it measures 149 mm. in length, 74 mm. in width, and 10 mm. in greatest thickness.

Grubbing tools (pl. 32, *a*; fig. 16) are of two definite shapes: one is rectangular with rounded corners, while the other is sagittate with a short base for possible hafting. Both forms are rather thin, considering the use for which they were probably put. The same can be said about the chipping technique used—percussion chipping occurs only around the lateral edges, since only natural thin chert sections were chosen because they needed just a little work to bring them into shape. None of these tools showed extensive usage of the blades, as they did not bear any polish from use.

Two *magnitite balls* were picked up from the surfaces of sites 44Mc66 (pl. 33, *b*), and 44Mc75 (pl. 33, *c*). Neither was whole, and

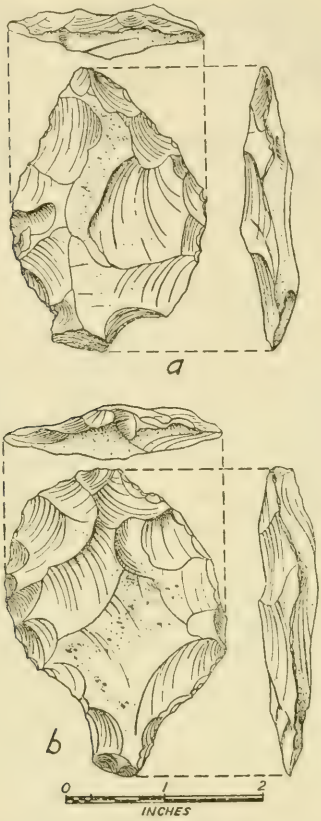

Figure 16.—Stemmed grubbing tools.

only about two-thirds of each was found. The larger specimen from site 44Mc66 measured 44 mm. in diameter and must have been almost a perfect globe, except for a single flat facet 20 mm. in diameter upon which it could easily rest. As seen in the photograph the surface has been smoothed in contrast to the surface of the smaller specimen.

The smaller specimen, from site 44Mc75, measures 33 mm. in greatest diameter and 28 mm. along its shortest diameter. The original crystal texture of the stone is readily visible on the outer surface, for it was not completely smoothed as was the larger ball.

It is not known what these balls were used for. From the appearance of the surfaces of each, it can readily be seen that they received considerable attention, and whether the shallow pits upon the surfaces represent the results of pecking or just one of its many natural features is not known.

Hammerstones are usually simple, round or ovid-shaped stones which were easily available to the inhabitants at the time of occupancy.

They are of a size that easily fits into the hand with a certain degree of comfort. Some show battering at one or both ends, the degree of battering depending upon the amount of its use, or the arduousness of the user. A number of them show that the original surface was further altered by pecking, a treatment which was not confined to any special portion of the surface. None of the surfaces were badly battered, and whether tools of this type were used simply to crush "green" bones, which are much softer and more elastic than stone surfaces, can only be conjectured. Other hammerstones were not only pecked into shape but display a number of faceted surfaces which are highly suggestive of having been abraided like a mano. Some of the hammerstones contain small pits on one large surface, or opposing pits.

Some of the hammerstones show that they were used to knock off flakes from rough cores or from other rocks. Hammerstones of this type are much larger, as a rule, than the average ones, and were made from stones that are harder than those usually used. Hardheads from streambeds were usually chosen for this task.

A single, roughly lunate-shaped, jasper flake, 51 mm. long, 20 mm. wide, and 5 mm. thick, was bifacially chipped along its leading edges and around both tips. Most of the chips, irregularly disposed around the edges, were first struck off by means of percussion and the edges retouched by pressure chipping. An irregular edge was created. Similar objects have been reported from Early Man deposits in the Old World. Garrod (1937, p. 81) mentions a similar technique used in some of the Audi and Chatelperron points.

A number of flakes were notched to form spoke shaves (see p. 81, pl. 28). The size of the concavity was not standardized but varied both as to breadth and depth. The working edge received pressure chipping from only one side, creating a steeply abrupt bevel atop a sharp cutting edge. The notches occur irregularly around the margins of flakes. Similar tools were reported not only from the Folsom level of the Lindenmeier site but from the Folsom level in Sandia Cave.

Early Man utilized large numbers of sharp-edged flakes as cutting tools as they were struck off from cores. None of the edges were actually "worked," but all display minute chipping scars brought about by use. Tools of this type were considered as temporary cutting instruments and quickly discarded when the edge became too dull for the purpose at hand. This reutilizing of flakes seems to be diagnostic of the early lithic periods.

LARGE-STONE INDUSTRY

Next to be considered are artifacts assigned to the large-stone industry. In this class are a number of so-called "hand-axes," "coup-de-poings," or "cleavers" (pls. 34, 35, 36, 37). For this discussion they will be called hand axes. The largest of the lot (pls. 34, *a–f;* 37, *a*) is a very fine-grained composite, silicified, sandstone specimen that measures 191 mm. in length, 106 mm. in maximum width, which is just about where the sides of the blade change direction to form the cutting blade. It is 34 mm. in thickness, which occurs about one-third of the distance up from the tip of the blade. This specimen was formed by percussion chipping in which large, broad flakes were cast off over most of the surface and smaller and shallower flakes formed the cutting surface.

Slightly smaller in size is a chert specimen (pl. 35, *a*) lenticulate in outline, with chipping scars fairly large and so spaced as to indicate that the maker was in complete control of his technique and understood the qualities of the material. At the present time the tip is missing as a result of recent farming activities over the site of the find. The surface of the specimen is completely altered by patination, which has changed the original color of bluish gray to a grayish white. Overall measurements are 169 mm. in length, 70 mm. in greatest width, and 20 mm. in maximum thickness. Accounting for the missing portion, the specimen in its original state must have measured around 190 mm. in length. It was made from an especially hard type of chert, for when the specimen is struck a sharp blow it resounds with a high note like a bar from a xylophone.

A few notched axes of quartzite and rhyolite, which are convex in outline and wedge-shaped in cross section (pl. 38), are in the collection. These were shaped by percussion, forming cutting surfaces at either end. Some have only one cutting edge opposed by a butt end, while the usual ones have two cutting blades.

The most common chipped artifact is the projectile point (pls. 39, 40, 41, 42). There is such a diversity of form that I hesitate to identify specific points with known types. Specimens have been recovered from the surface, the humus layer, as well as in context within cultural zones. All of the points have been examined for variations that might indicate a potential time differential.

It has been taken for granted that the heavier and larger points, as well as those of medium size, are either dart points or knives, while the smaller, lighter, stemmed varieties are designated as arrow points. This in itself indicates a certain time differential, for it is known that darts were used with the atlatl much earlier and long before the introduction of the bow and arrow.

Many of the points display numerous shapes with modifying differences (pls. 43, 44, 45, 46). The greatest number of points were made of chert. In descending numbers we find that rhyolite came next, followed by quartz, quartz crystal, quartzite, gray chalcedony, and flint the very last. Practically all of the chert and rhyolite forms are substantially patinated, and in a number of instances the surface characteristic features have been so greatly altered by the process of patination that the chipping scars have become modified and softened, and the edges of the artifact dulled, and in some instances smoothed. Patination has not only deeply penetrated the cortex of the artifact but it has brought about a decrease in siliceous content, changing the physical coloration of the original stone so completely that it is no longer the original gray but a yellowish-gray or a grayish-green color. Only a few of the late varieties do not display any patination. The latter are the small triangular points that are usually associated with the Late Woodland cultures.

If this alteration in the chert and rhyolite artifacts is significant and it necessitates, according to geological standards, thousands of years to bring about such extreme change in the actual composition of the stone itself, then these artifacts must be assessed accordingly. Whether petrologists would agree with this geological assessment is not known.

It is my opinion that absence of patina on an occasional point of any type does not mean much except that it may have been protected from chemical change in some manner, but when we find that all of a certain type are deeply patinated and that all of another type, both of equal sensitivity, are untouched or unaltered by patination, then it must necessarily mean that there is a general age difference. It would appear reasonable to suppose that the patination is purposeful, since it is not only very thick but the edges and the fractured surfaces which were once thin and sharp, have become dull and worn down until they have become smooth by nature's agencies acting over vast periods of time.

It is next to impossible to separate the artifacts into absolute distinctive cultural assemblages, but the various forms are interesting in that they resemble other forms found elsewhere under circumstances suggesting some antiquity. Included in the group are specimens that resemble the Sandia, Clovis, Folsom, Manzano, Gypsum Cave, San José, Borax Lake, Silver Lake, and many others. Most of these forms were recovered from the middle or upper terraces of the Roanoke River Valley, which in itself suggests that the original deposition took place at periods when the river and its tributaries occupied a higher level and had not as yet cut down to its present bed level.

An apparently seemingly early form may be characterized as being slender, lanceolate in outline, and somewhat crudely formed. This type has been called a "fish spear," which is suggestive of an early generalized lithic culture that may have existed not only in the littoral and upland sections of the Eastern United States but persisted over a long period of time. During this interval certain types of stone tools were manufactured, all having a number of common characteristics that were modified slightly into local variations. None are sensitive enough, in view of knowledge of the present time, to serve as horizon markers or index fossils, since they are either much too rare or their distribution through time is much too widespread.

In nearly all of these stemmed varieties one shoulder is dominant while the other is recessive or nonexistent. Only a few of these forms have been found in context, as far as the writer knows, and only a few have been dated by means of radiocarbon methods. The best said about their antiquity is that they belong to components of Early Man and range up to the archaic, which indicate that these types persisted over long periods. Such evidence as this would suggest that there were other cultural entities than those now recognized and that they will be recognized by distinctive projectile forms, examples of which are included within the present collection.

TECHNIQUES

Manufacturing methods are not consistent nor can they be accurately dated. A number of specimens show that percussion flaking, pressure chipping, and a process termed as "rapping or nibbling," or a combination of all were used to fashion the artifact. In contrast to percussion flaking, where the blow is dealt at an angle to cast off the flake, rapping is brought about by dealing short, well-directed blows directly downward and vertical to the long axis of the artifact, resulting in crushing hinge fractures rather than a clean chipping or casting off of the unwanted portions of stone. Single projectile points may display all three techniques. One side will show that percussion flaking was used to outline the object and later the edges were retouched by means of pressure chipping. On the reverse side, rapping was used and the edges may or may not show secondary chipping. Some projectile forms display well-controlled pressure flaking in that the flakes either carry across transversely or at an obtuse angle. This type of flaking in Virginia and North Carolina is distinctive and appears to be as well controlled as any utilized by Eden and Folsom technicians of the western sections of the United States.

Practically all the artifacts under consideration were initially fashioned by percussion flaking. This is also true of the smaller and some of the better made tools. Finally, pressure flaking was used not only to trim but to sharpen some of the edges. This combination of techniques not only accounts for the thinner, finer flakes but for the larger, coarser chipping used to smooth and to thin down the faces of some of the artifacts. This combination of techniques is not always predictable.

Percussion was used to first cast off flakes of various sizes and thickness from nonpolyhedral cores. These flakes were taken and altered sufficiently to bring into being projectile points, as well as other utilitarian tools.

Flaking may be classed as horizontal, transverse or diagonal, to irregular, while flake size may show a high degree of variability. Secondary chipping, or retouching, may or may not be present.

Recently, attention was called to a number of illustrations used by de Mortillet (1881), indicating the various steps in the construction of fluted points in Europe formed by transverse or collateral chipping followed by the casting off of the central longitudinal flake or flakes on either side of the artifact to create the characteristic fluting effect. Single, double, or multiple-channel flakes were cast off, giving the object a fluted effect similar to those displayed by the New World forms.

The presence of fluting in Europe would explode the present conception that this technique was a New World invention. There are many references in the literature which state that fluting did not occur in the Old World and that the New World man invented the casting off of long, centrally placed channel flakes, creating a fluting effect on his projectile points. Since this technique does not occur in Siberia or any of the immediate territory and it does occur in European Swiss lake-dwellers' deposits, one would have to stop to explain the reason for this invention and how it got to the New World either by diffusion or by actual contact. Was this an independent New World invention or did it have its inception elsewhere? Which direction did it move and who invented this process? These are factors that must be answered to justify the statement that Early Man only succeeded in crossing the Bering Straits into the New World and that some of the earliest points utilized by him were of the fluted variety. There must have been some contact between the early men of Europe and those in the New World and if it can be proved conclusively that there was no contact then there is reason to suggest independent invention of this process. A provocative thought is that the manufacturing techniques of Folsom points, and others, have been compared to the nicely chipped Solutrean points of Europe. All of these were made by master stone chippers. Here is found another point in common that links Early Man of the New World, not with Asia, but with Europe.

Flaking tools have never been satisfactorily determined. It is known that both bone and horn (antler) fragments have been utilized in the manufacture of the various chipped objects, but it is not usually known that chipped-stone tools were also used for this purpose as well. Late in the 19th century Sir John Evans (1897, pp. 412–416) described a number of "finger-slim" chipped-stone objects as "flaking tools or fabricators," which he believed to have been used in the chipping of other stone tools. In France, these objects have been called "ecrasoirs" by M. de Mortillet (1881, pl. 45, Nos. 411–418), who prefers the term "retouchoir" stating that their extremities were often worn smooth through use. These tools served to flake by pressure (retouch) the various stone implements, and in so doing the tendency would be to smooth down the edges of the flaking tool.

In the present collection there are a number of just such tools that are made of chert, extremely heavily patinated, and varying as to size (fig. 9). The smallest and best-chipped of the lot measures 29 mm. in length, 20 mm. in width, and 10 mm. in maximum thickness. The two medium-sized specimens measure 43 mm. and 49 mm. in length, 21 and 23 mm. in width, and both are 10 mm. in maximum thickness. The largest of the specimens measures 70 mm. in length, 24 mm. in width, and 11 mm. in maximum thickness. It will be noted that there is comparatively little variation in either width or thickness in the four specimens; the only real variation comes in the overall length.

These tools are unique in that no matter in what direction one decides to determine the cross section, it always turns out to be lenticular. For that reason, as the edges are approached the sides become thinner until the actual edge is reached. Flaking scars on these tools indicate that percussion was used to shape the tools which were later retouched by pressure chipping, since some of the flakes are fairly long, shallow, and well controlled (pl. 47, *g*, *h*, *i*, *j*, and *k*).

Roberts (1936 a, pp. 24–25, fig. 4) described and illustrated a comparable artifact from the Lindenmeier site in northern Colorado and attributes this to one of the scraper class, and, like the Virginia specimens, it too has been made from a small core and not from a flake like the majority of the other tools. The long slender chips that were removed during its shaping show that the maker not only possessed great chipping skill but understood the nature of the material as well. Only this single specimen from the Lindenmeier site would predicate that such objects are far from plentiful, not only in the Western sites but in those found in the Eastern States as well.

If the various *projectile points* were to be separated according to form, they would possibly match, almost exactly, a number of the better-known types from sites in the Southwest, Plains, as well as some of the Old World forms. This does not imply that similar cultural and time affinities are inferred but only indicates that similarities do exist in the Eastern United States.

In an earlier study, Miller (1949 b) pointed out a number of types resembling Eden, Gypsum Cave, Manzano, and Elys Ford types whose similarities in technique and form are so close that one would be hard pushed to distinguish between those coming from southern Virginia and those from the type sites. It is true that none of these forms are overly plentiful, but their mere existence should indicate that they do occur in sufficient numbers over a greater area than heretofore noted and that they were manufactured by the aboriginal occupants of the area.

Among the various recognized types, are the following: a number of Sandia type 1 forms, both in chert and in quartz (fig. 17, *c*, *d*), resembling the illustrations by Hibben (1937; 1941, pl. 11, *a*, *c*, and *e*) with the exception that the base is not quite so rounded and definite. The Virginia examples resemble the type specimens both in chipping technique and in the general treatment of the shoulder and base. This type has one slightly sloping shoulder that marks the beginning of a tapering stem terminating in a rounded base, and whose overall cross section is lenticular. These forms are rare here in the east.

Sandia points, originally found in Sandia Cave located in the Sandia Mountains, about 25 miles northeast of Albuquerque, N. Mex., oc-

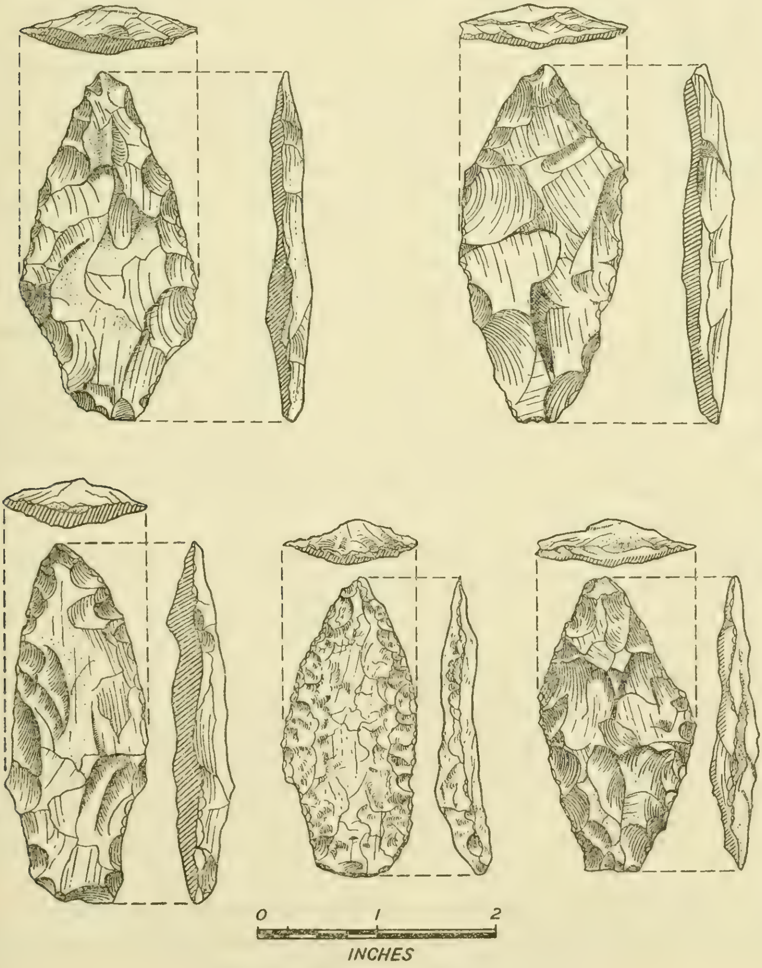

Figure 17.—Sandia-like projectile points.

curred in a layer stratigraphically beneath one containing Folsom points (Hibben, 1941). They are considered to be the oldest stone projectile type found in America and are characterized as a crudely made, simple lanceolate-shaped blade with a single weak shoulder, lenticular in cross section, and moderately thick, displaying numerous hinge fractures due to a rapping technique rather than to pressure or percussion flaking, terminating in a rounded or subrounded base. "Sandia cave men were dated at around 25,000 B.C." and were found in context with associated sloth and mammoth (Hibben, 1946, p. 149).

A type 1 Sandia point was reported from a Paleo-American site in Jefferson County, Ala., and illustrated by Kleine (1953) and Lewis (1954). This point, when submitted to Drs. Roberts and Hibben for examination, was declared to closely resemble the type specimen found in New Mexico. Dr. Roberts has been quoted as saying: "It is one of the best specimens to be reported from outside of the cave itself" (Lewis, 1954, p. 26).

With Sandia type 1 points in Alabama and Virginia and both reported from open sites, it would appear to indicate that Sandia man may have lived and hunted extinct fauna in the East before the makers of Clovis type points came into this section of the United States.

The Clovis point, the earliest of the true fluted types, was first found associated with the remains of extinct mammoth near Clovis, N. Mex., and to underlie the classic Folsom fluted. It has been demonstrated to be older than the Folsom fluted (Sellards, 1952). Its chipping is less refined and varies in length from 3 to 4½ inches, is somewhat thicker than the Folsom, and the central flutes seldom extend the entire length of the blade. The widest part of the blade is about the middle and contracts slightly toward the base, which is less concave than the classic Folsom. These points lack the slight projection in the center of the base commonly called the "striking platform," which is present in the Folsom.

Sandia cave and Clovis men probably hunted the mammoth as their chief source of food but they did not pass up an occasional bison, camel, or horse. Haury (1953) has demonstrated that there is quite a size variation in this projectile type and that chipping features are not uniform, indicating a lack of standardization, which has heretofore been taken for granted. Besides the projectile points, certainly other tools were used for slaughtering purposes, which were demonstrated in Mexico by Aveleyra and Maldonado-Koerdell (1953, pp. 332–340, fig. 105). None were found during the survey or excavations but they do occur elsewhere in this section of Virginia and North Carolina.

The *classic Folsom*, thought at one time to belong to the earliest of Early Man in America, is younger than either the Sandia or the Clovis type. It varies in length from 1¼ to 2¼ inches; the flutes typically extend the entire length, or almost the entire length, with the sides fairly parallel converging abruptly to a somewhat stubby tip, while the base, deeply concave with prominent ears extending backward, contains the typical raised "striking platform" in the center of the basal concavity. Usually the blade receives secondary chipping along the upper sides and tip, while the lower portion of the sides and base have been abraided. Several clear quartz points of this type have been recovered from surface indications in Mecklenburg County, Va.

Gladwin (1947, pp. 97–98) noted that the most important aspect of the Folsom culture was the quality of their chipping techniques in which the delicacy and accuracy of the flaking suggests a relationship to the better known Solutrean industry of western Europe, even though these standards were not always maintained. Most of the recorded classic points, with characteristic fluted channels and finely flaked edges, came from Colorado and Eastern New Mexico, with a few reported from Alaska, Saskatchewan, and from the Rockies to New England, with a marked concentration along the Ohio, Missouri, upper Mississippi, and the river systems of south-central Virginia. Poor examples, which would probably not be acknowledged by a Folsom chipper, have been picked up in California, Arizona, and Texas.

Folsom men were primarily hunters of bison, but they, too, were not adverse to killing horse or camel.

> Throughout a large part of the area where Folsom points have been found, there are also beautifully flaked points—called Yuma [Eden]—which lacked the fluted grooves of Folsom but are even more typically Solutrean in delicacy and regularity of their flaking. Judging by the character of the chipping and the coextension of the two types, it looks as if both were products of the same people, and the differences between them could be explained either as their having been made to serve different purposes, or possibly, stages of development. If there was a difference in time it is probable that the more highly specialized Folsom evolved out of Yuma than vice versa. In any case, the Solutrean quality of the flaking and the fact that the Solutrean industry in Europe has been dated at 15,000 B.C. suggest very vaguely the time of the arrival of this second migration.
>
> Several rather important facts are brought out by the distribution of the typical Folsom and Yuma flint tools, such as the people who made them were not the first to reach North America. With unmistakeable traces in Alaska, Saskatchewan, western Nebraska, Colorado, and eastern New Mexico, it is clear that they moved southward through the western plains until they reached northern Texas, but the relative scarcity of true Folsom sites indicates that the initial vanguard of this migration consisted of only a small number of people. [Gladwin, 1947, p. 98.]

Scottsbluff and Eden chipping techniques are very much in evidence. The Scottsbluff technique consists of diagonal chipping from either edge terminating in a slight central ridge running from about the base of the point to the approximate tip. The Eden technique resembles the Scottsbluff in that both have a central ridge, but the Eden chipping runs parallel to the base. Radiocarbon dating methods give an average age of 9,524 plus or minus 450 years for charcoal associated with Scottsbluff points.

Plainview, another type of early point shaped somewhat like a Folsom, does not have the long central flute removed from its two faces; the lower edges are often ground, and its surface is sometimes chipped like an *Eden* and sometimes chipped with larger and less regular flakes. This point was named as the result of a discovery in 1945 by Glen L. Evans and Grayson E. Meade in a site near Plainview, Tex. Krieger (1947) has suggested that the Plainview point lies somewhere between the classical Folsom and the Yuma types. The *Browns Valley Point* may fall within this category. Later studies may show that all these points, as well as a number of other points made by Early Man about this same period, have a common relationship.

The *Abilene* point has been defined as "a long, narrow point roughly chipped" (MacGowan, 1950, p. 123); "the distinctive thick, base flattened, leaf-shaped type of projectile point (later termed Abilene Point)" (Ray, 1937, p. 193), and "are about two to three inches in length, thick, crudely flaked by percussion, and roughly leaf-shaped. In some examples flakes have been removed from one side, resulting in a stem beveled to the right" (Wormington, 1939, Chart II, pp. 36, 44). Some workers state that the base is thinned on one side similar to the *Watts Pit point*, which might go back to ancient Pleistocene or immediately post-Pleistocene times.

There are a number of points from various sites in the John H. Kerr Reservoir basin that fit these descriptions and resemble in outline and in chipping techniques those illustrated by Wormington (1939). All have been fashioned from chert; whether flakes were utilized cannot be determined since the entire surfaces have been sufficiently altered to destroy any such evidence. Chipping may be either collateral or oblique where the chip originates at the side and turns downward toward the tip rather than upward and toward the base, such as indicated by Wormington.

Davis (1953, p. 384, fig. 133, *g*, *h*) has given the name "Meserve" to a

> specialized functional variant of the Plainview point. These points are shorter and stubbier than Plainview; the tip is more than half the total length of the specimen and the tapering tip edges made an angle with the parallel basal edges. The tip edges are unifacially bevelled for their full length, the bevel being on the right edge of the face when the tip is upward. This alternate unifacial beveling produces a rhomboidal cross section near the tip. Fine, irregular, unifacial flaking is visible on the beveled tip edges suggesting that these 'points' were used for scraping or boring. . . . Similar points have been

found at the Meserve bison quarry near Grand Island, Nebraska, in 1931 and at the Gibson site near Abilene, Texas in 1940.

Points resembling the "Meserve" or "Gibson" points with the exception of the beveling of the edges of the blade occur within the limits of the reservoir and adjacent territories. These points are shorter and stubbier than the Plainview, and the blade, as a rule, takes up more than half of the total length of the point angling off to the tip. The triangular tip rests upon a rectangular body, whose sides are not always parallel but may contract but slightly to form the base of the butt. All are very carefully chipped and most of them have been retouched along the edges. The seven points of this type in the collection have been carefully measured both in inches and in millimeters, and the results are given in table 1.

TABLE 1.—*Measurements of seven Elys Ford points in inches and millimeters (see fig. 18)*

	Inches	Millimeters	Inches	Millimeters	Inches	Millimeters	Inches	Millimeters	Inches	Millimeters	Inches	Millimeters	Inches	Millimeters
Total length (*c–f*)	$1^{13}/_{16}$	45.5	$1^{14}/_{16}$	46.0	$1^{8}/_{16}$	38.5	$1^{15}/_{16}$	48.5	$2^{2}/_{16}$	53.0	$1^{13}/_{16}$	----	$1^{9}/_{16}$	----
Width across shoulders (*d–e*)	$^{14}/_{16}$	22.5	$^{15}/_{16}$	25.0	$^{14}/_{16}$	22.0	$^{13}/_{16}$	21.5	$1^{1}/_{16}$	26.5	$^{14}/_{16}$	21.0	$^{14}/_{16}$	25.0
Width across base (*g–h*)	$^{13}/_{16}$	21.0	$^{13}/_{16}$	23.0	$^{11}/_{16}$	18.0	$^{12}/_{16}$	17.5	$^{14}/_{16}$	23.0	$^{11}/_{16}$	18.0	$^{16}/_{16}$	25.0
Length of tip (*b–c*)	$1^{2}/_{16}$	----	$1^{2}/_{16}$	----	$^{13}/_{16}$	----	$1^{3}/_{16}$	----	$1^{8}/_{16}$	----	$1^{5}/_{16}$	----	$^{14}/_{16}$	----
Length of butt (*b–f*)	$^{11}/_{16}$	----	$^{10}/_{16}$	----	$^{11}/_{16}$	----	$^{12}/_{16}$	----	$^{9}/_{16}$	----	$^{7}/_{16}$	----	$^{9}/_{16}$	----
Thickness	$^{3}/_{16}$	4.5	$^{3}/_{16}$	4.5	$^{3}/_{16}$	4.5	$^{4}/_{16}$	5.5	$^{3}/_{16}$	4.5	$^{4}/_{16}$	6.0	$^{4}/_{16}$	6.0

It has been found that when the blade is resting upon its base the angle (angle *a* of fig. 18) varies from the vertical as much as 16 to 20 degrees. This angle becomes more abrupt after either resharpening or repointing, around 31 to 32 degrees, creating a shorter and blunter tip.

Blade length (*b-c*) measured from a median line across the shoulder to the tip of the blade varies from $^{14}/_{16}$ to 1 and $^{8}/_{16}$ inches. Base height (*b-f*) varies from $^{7}/_{16}$ to $^{11}/_{16}$ of an inch, while base width (*d-e*) varies from $^{13}/_{16}$ to 1 inch.

Basal thinning, nearly always present, was accomplished by a crude fluting whereby one or more pressure flakes were cast off from one or both sides of the point from a prepared nipple or striking platform in the slightly concave base, the remains of which can be determined in a number of the specimens. Basal thinning in the thicker, straight-based specimens does not occur. This same holds true for smoothing, or rubbing, of the sides of the base. The sides of the concave-based specimens are mostly smoothed, while those with straight, flat bases are usually untouched.

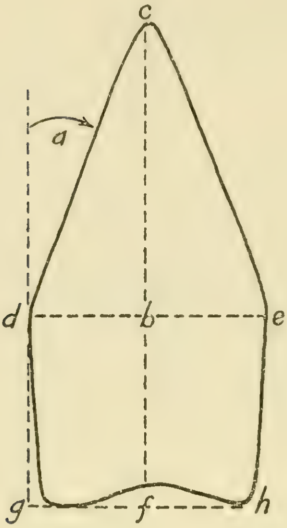

FIGURE 18.—Landmarks on pentagonal points.

Six hundred and thirty-five stone tools or fragments were recovered from a number of sites in the Bluestone Creek drainage. Of this number 552 are of chert, 105 are of rhyolite, and 8 are of quartzite. Not all of the tools are complete and only about half of these can be classed as projectile points. The rest are either picks, digging tools, knives, crude scrapers, or large chips that were used as cutting tools. Projectile types have been roughly classed as ovates, lanceolates, and stemmed.

Most of the ovate types (pl. 48) are somewhat lanceolate in outline, fairly thick and lenticular in cross section, and vary in length from 1⅜ inches to 5½ inches. Some are percussion chipped, others are pressure flaked, while others appear to have been rapped into shape. A combination of all techniques may be found upon a single specimen.

Five subtypes of the ovate forms have been determined. These are as follows (detailed measurements are given in table 2):

TYPE 1: Stemless, notchless

Outline: Essentially ovate

Lateral edges: Slightly convex

Base: Decidedly rounded

Length: Varies from 36 to 84 mm.

Width: Varies from 14 to 33 mm.

Thickness: Varies from 6 to 13 mm.

Distribution: Comparable forms have been noted from southern and eastern Georgia, South Carolina, North Carolina, Maryland, Pennsylvania, and New York and extending westward to and beyond the Mississippi River.

Resemblances: Some resemble the Pinto leaf-shaped of California (Wormington, 1947, p. 79, fig. 17 *c*) while others resemble the type 1 of Clear Fork culture of Texas (Roberts, 1940, p. 74 and fig. 7, *4*).

TYPE 2a: Ovate with slight indication of an incipient stem.

Outline: Essentially ovate with a slight protrusion at the spot forming a slight shoulder.

Lateral edges: Slightly convex.

Base: Decidedly rounded.

Length: Varies from 30 to 90 mm.

Width: Varies from 21 to 35 mm.

Thickness: Varies from 7 to 14 mm.

Distribution: Not plentiful. Specimens have been noted from Alabama, Tennessee, and New Mexico.

Resemblances: Comparable to Sandia type 1 in outline and in chipping scars.

TYPE 2b: Essentially the same as type 2a with the exception that the base is more rectangular in shape and slightly concave with a certain amount of basal thinning. In cross section this form tends to be more diamond shaped while the type 1 is more lenticular. These points are not numerous and can be confused with points of later cultures because of their chipping and a certain amount of lopsidedness and because of being single shouldered. Resembles Sandia type 2.

TYPE 3a: Outline somewhat triangular in that the lower basal section of the ovate is either flattened or squared.

Lateral edges: Slightly convex.

Base: Flattened or squared.

Length: Varies from 40 to 102 mm.

Width: Varies from 16 to 25 mm.

Thickness: Varies from 7 to 14 mm.

Cross section: Lenticular.

Distribution: Found throughout the eastern United States in the Archaic and Early Woodland horizons.

TYPE 3b: This type is essentially the same as that of type 3a with the exception that the base forms an obtuse angle rather than being squared.

Length: Varies from 46 to 93 mm.

Width: Varies from 19 to 25 mm.

Thickness: Varies from 7 to 13 mm.

Cross section: Mostly lenticular; occasionally it may be diamond shaped.

Distribution: Same as for type 3a.

TYPE 3c: Essentially the same basic outline as that of type 3a with the exception that the base is slightly concave.

Length: Varies from 45 to 99 mm.

Width: Varies from 16 to 29 mm.

Thickness: Varies from 7 to 15 mm.

Cross section: Practically all are lenticular but occasionally one might turn up which is diamond shaped.

Distribution: Same as for type 3a.

TYPE 4:

Outline: Lanceolate with contracting basal section, flat base, and rounded shoulders.

Lateral edges: Slightly convex.

Base: Flat, occasionally a faint indication of being incurvate.

Length: Varies from 58 to 93 mm.

Width: Varies from 19 to 37 mm.

Thickness: Varies from 8 to 17 mm.

Cross section: Somewhat on the flattish lenticular.

Distribution: Same as for type 3a.

Type 5: Resembles type 4 only the blade is longer, not quite as wide and the stem is more pronounced, being thinner and is either flat or concave at the base.

Length: Varies from 47 to 121 mm.

Width: Varies from 16 to 27 mm.

Thickness: Varies from 9 to 25 mm.

Cross section: Mostly diamond-shaped. Rarely lenticular.

Distribution: This type has not been observed over a very wide range. Was noted in northern North Carolina, western South Carolina, and eastern Georgia, as well as in most sections of Virginia and eastern West Virginia. A few have been noted in collections in central Tennessee.

Table 2.—*Detailed measurements of the five subtypes of ovate projectile points*

Type	Length	Width	Thickness	Stem length	Type	Length	Width	Thickness	Stem length
	Mm.	*Mm.*	*Mm.*	*Mm.*		*Mm.*	*Mm.*	*Mm.*	*Mm.*
Type 1	36	15	7		Type 2b	76	27	15	
	37	19	6			78	26	9	
	41	20	9			78	23	11	
	42	18	7			83	23	11	
	43	17	8			83	22	10	
	43	14	8		Type 3a	40	16	7	
	45	17	7			42	17	9	
	45	21	7			49	22	9	
	45	18	7			51	22	7	
	46	18	10			53	21	8	
	46	21	7			55	18	10	
	46	17	10			55	20	9	
	48	18	9			59	20	7	
	49	16	9			60	21	10	
	50	19	10			61	22	9	
	50	21	8			62	22	14	
	51	17	8			62	18	9	
	52	19	8			63	22	14	
	55	20	8			64	18	10	
	56	21	9			64	24	9	
	56	17	9			68	22	9	
	57	22	9			68	24	7	
	57	15	9			68	21	12	
	57	20	9			70	24	10	
	64	24	12			70	21	13	
	65	20	13			71	21	15	
	70	21	11			74	25	7	
	70	19	6			75	19	10	
	71	22	13			75	20	13	
	73	21	12			75	24	11	
	73	25	9			76	22	10	
	73	23	11			76	21	10	
	76	24	11			78	22	11	
	76	18	7			102	24	15	
	84	33	12		Type 3b	46	10	12	--------
Type 2a	30	21	7			47	19	10	--------
	53	21	9			50	21	12	--------
	61	21	8			51	20	10	--------
	62	23	10			51	22	10	--------
	63	28	11			52	17	9	--------
	73	26	9			54	21	11	--------
	73	33	11			55	21	11	--------
	75	30	11			57	23	7	--------
	77	25	11			57	23	10	--------
	80	34	11			60	22	11	--------
	93	35	14			61	25	10	--------
Type 2b	46	20	8			62	20	8	--------
	56	20	10			65	19	11	--------
	58	22	8			66	20	11	--------
	61	21	13			69	19	13	--------
	62	17	8			70	25	11	--------
	64	22	11			82	20	11	--------
	65	19	11			83	20	10	--------
	66	22	15			87	24	12	--------
	66	28	16			88	23	12	--------
	68	17	7			93	23	11	--------
	69	19	9		Type 3c	45	18	9	--------
	73	22	11			46	16	10	--------
	73	24	9			47	17	11	--------
	73	22	11			53	20	9	--------
	74	21	8			54	26	10	--------
	75	33	10			56	23	9	--------

TABLE 2.—*Detailed measurements of the five subtypes of ovate projectile points*—Continued

Type	Length	Width	Thickness	Stem length	Type	Length	Width	Thickness	Stem length
	Mm.	*Mm.*	*Mm.*	*Mm.*		*Mm.*	*Mm.*	*Mm.*	*Mm.*
Type 3c	57	23	10	--------	Type 4	65	23	8	--------
	57	23	8	--------		66	28	9	--------
	58	19	11	--------		69	22	8	--------
	58	19	11	--------		70	22	8	--------
	59	19	10	--------		70	24	14	--------
	61	21	13	--------		75	20	8	--------
	61	27	11	--------		82	25	17	--------
	65	27	10	--------		84	37	10	--------
	65	29	11	--------		90	31	11	--------
	67	23	10	--------		92	24	10	--------
	68	22	12	--------		93	23	10	--------
	68	18	7	--------	Type 5	47	16	9	13
	77	26	11	--------		58	25	11	16
	79	28	11	--------		75	25	13	9
	83	22	10	--------		91	25	14	20
	84	26	13	--------		97	24	10	18
	86	28	16	--------		105	26	10	17
	90	25	11	--------		109	23	18	20
	96	24	9	--------		115	27	12	22
	99	26	11	--------		115	24	11	24
Type 4	58	19	11	--------		121	22	11	24

A number of the Catalonian shouldered Solutrean-like blades of the Old World, closely resembling those recovered by Harrington (1933) from Gypsum Cave and called the "Gypsum Cave point" [8] for the New World, have been recovered from sites within the John H. Kerr Reservoir basin area. These carefully finished blades are made from flakes which have been thinned by precise surface flaking, supposed by some people to have been performed by pressure flaking and by others by percussion chipping "by means of blows delivered by skillfully wielded small hammers" (Moir, 1927 p. 110). The entire surface is beautifully chipped by the removal of fine transverse flakes, and a broad, comparatively flat, tapering, centrally placed stem or peduncle is mounted above a triangular-shaped body so that on either side are carefully finished points or barbs as shoulders.

Blade sizes demonstrate a considerable range not only for the reservoir area but from coast to coast of the United States. The longest specimen in the reservoir area was found to measure 78 mm. in length, while the shortest is within the 27 mm. limit. Usually, in the smaller types the peduncle or stem is only, what might be called, formative or rudimentary, depending upon whether one wishes to term it the precursor or degenerative form of this particular blade.

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[8] "Augustine points by Dick have pointed bases and wider range than Gypsum Cave and Manzano Cave. Similar specimens have been found in Mexico and the possibility may be considered that it was the makers of these artifacts who first introduced maize into the Southwest" (Wormington, 1949, p. 100).

Flaking, as stated above, is in the form of fine, well-controlled transverse chipping which meets along a median line, giving to the blade a lens-shaped cross section.

Chert (87.6 percent), quartz (14.3 percent), quartzite (4.8 percent), and jasper (2.4 percent) have all been used in the manufacture of these blades. Some are much thicker in cross section than others, but these are not usually thought of as being thick blades.

Either growing out of this form or leading into this blade shape are a number of rough diamond-shaped blades that still retain the characteristic stem, while the blade is much stubbier and shorter, usually about the same length as the peduncle itself, or shorter. It is now suggested that this form be termed the "*Jeffres point.*"

Closely resembling these forms is another group (*Skipwith point*) whose receding stem terminates squarely across rather than in a blunt tip. In all other respects it is a "dead ringer" for the Gypsum Cave form in that the stem is blunted and receding from well-defined, shouldered, transverse-chipped triangular blade, which is lenticular in cross section.

Another variant has been called "*Gary Stemmed*" by Newell and Krieger (1949, pp. 164–165) and is much too inclusive to constitute a type. As they stated:

> It includes many variations in size, workmanship, and stem and blade form, but in general is a heavy point with the stem contracting to a sharp or rounded tip. If and when projectile points in the Eastern United States are ever worked out into valid historical types (as contrasted with present haphazard classifications) "Gary Stemmed" may be broken down into several types, or at least into local specializations, within a very broad type.

Within their classification the predominating features are the stem with its contracting sharpened or pointed tip. This type was formerly called the *Gary Contracting Stem* but it now appears that the stem can vary toward parallel sided, particularly when the materials are difficult to chip, and so the defining term "contracting" has been dropped from the type name.

Gary Stemmed points have a tremendously widespread range as they

> are common in the archaic or preceramic cultures of the Eastern United States and continued into early pottery cultures such as Woodland, and others which may be included in a horizon roughly equivalent to early Woodland. They disappear before full Mississippian horizons are reached, or possibly continue into them as a minor type after small light "arrow" points become common. All this requires considerable work before definite statements are possible. [Newell and Krieger, 1949, p. 165.]

The writer, too, believes that because of inadequate data much more work should be done before any definite statement or statements can be made about their true cultural range or associations. Rather than to state definitely that the cultural range of the Gary Stemmed points extended from the archaic through the Woodland and possibly continued into Mississippian times as a minor type, one should be sure of his data. This statement appears to be based purely upon conjecture rather than upon actual fact. From present knowledge and data it appears that this type neither occurred after the middle part of what we have termed early Woodland in southern Virginia nor did any of its variants.

It has been indicated (Bell and Hall, 1953, p. 4) that the Gary Stemmed is a dart point, and that similar points conforming to this configuration occur in various Concho sites in Arizona (Wendorf and Thomas, 1951, p. 109; and fig. 49, *i* and *j*). It would appear that points of this type are possible outgrowths of the Gypsum Cave and related types.

All of these forms exhibit special variations of a more general culture that extended not only along the eastern littoral states, which were adapted to the environment of the primeval forest of what appears to be a form of the American Mesolithic or late Paleolithic times, but to other sections of North America as well. The cultures adapted to these specialized environmental conditions must be correlated with an early date and very specialized food supply, but it is impossible, at this time, to make time speculations and separations as to form, since not a single undisturbed stratified site containing these forms has been located thus far.

Tong (1954, p. 126, fig. 43, *19–20*) noted a similar type from the Table Rock Dam and Reservoir area on the White River in the rugged Ozark region of southwestern Missouri, and the archeological evidence predicates an archaic horizon, similar to the Eastern Archaic, is developing at the Cox site, which lies a few miles upstream from the James River arm of the proposed reservoir and is located on Crane Creek approximately 1 mile above the confluence with James River. His subtype 3 Stemmed Point is essentially a basic chert having the same configuration and chipping techniques as those assigned to the Archaic in Virginia.

He (ibid., p. 128) states:

> Stemmed points of subtype 3 from Cox are very similar to points recovered by University of Missouri archaeologists in the excavations of Rice Shelter on White River some 35 miles southwest of the Cox site. These points from Rice Shelter extended from the lowest levels to fairly late times (Marshall, et al., 1953, pp. 8–11). Another very close similarity is between the projectile points from the Cox site and preceramic horizons of northeastern Oklahoma.

The Scott site, located in the southern part of Le Flore County in eastern Oklahoma in the Fourche Maline River valley, has yielded a number of receding stemmed points which resemble the Gypsum Cave, the Gary Stemmed, the Jeffres, and the Skipwith points. Bell and Hall (1953, p. 322) indicated:

> The most typical Scott site projectile point is made of quartzite, is large in size, rather crude in workmanship and is represented by shape type 3b (figs. 94, 97). The few obvious differences were those in shape types and sizes. In general, the Scott site points are crudely made, probably because of the material; occasionally, however, good quality workmanship is found in all levels of the midden. . . . There is a general impression that the tapered stemmed forms grouped under shape type 3 become less broad and less irregular in outline as one progresses from lower to upper levels.

They (ibid., p. 331) concluded that

> Excavations at the Scott site suggest that the Fourche Maline focus as it has been recognized is either not a single complex or that it existed with some modifications over a long period of time from an Archaic prepottery period through early Woodland, and possibly longer. At the present time, it is not possible to clearly differentiate time or cultural differences because of inadequate data.

At a number of Early Man sites, 44Mc53, 44Mc66, 44Mc72, 44Mc73, and 44Mc75, there was an admixture of Early Man and Archaic remains. At 44Mc72 we recovered the tapering poll ends of three large archaic celts; a fine-grained sandstone specimen was so badly battered by the aborigines that both the blade section was missing and the poll end fractured, and only a central portion remained. All specimens are oval in cross section, and in general outline are smoothed rather than polished. All are typically archaic and were associated with many of the dart and other points.

There also occurred a number of *cupstones* having one or more small shallow saucer-shaped indentations. The stones themselves were unworked or rather not shaped, and the materials varied from granitic to a heavily crystalized blackish stone. Many of these cupstones are about the size of a man's fist, while others are much larger. Similar specimens have been recovered in the past from Archaic and Early Woodland sites.

Then, a number of thick-walled *steatite vessel* sherds occurred, principally at sites 44Mc53, 44Mc66, 44Mc72, and 44Mc75. Rims were either rounded or flat in outline, and horizontal knobs, which served as handles, varied in shape from round to flat-oval. These knobular handles were either immediately adjacent to or below the rim of the vessel. Vessel shape varied from round to oval and in depth from shallow to deep. It is usual for tool marks to appear on the exteriors but the interiors were well smoothed.

Steatite was also used in the construction of *gorgets*; a number of fragmentary gorgets were recovered from 44Mc7 (pl. 49). One outstanding example occurred in the form of a roughly diamond-shaped form having central perforations, which were made by drilling from either side. Such holes were probably threaded for the suspension of the object. Engraved upon one of the flat surfaces were a number of crude lines forming no definite pattern.

Like the steatite gorget, a slate specimen was also engraved with a design that might be termed diamond shaped. The lines are thin, shallow, and "V-shaped" in cross section but not regular.

ARCHAIC HORIZON[9]

It is estimated that the Archaic Period started around 5000 B.C., about the same time that the Altithermal Period set in bringing about a warmer and drier climate, which not only dried up numerous rivers, swamps, and lakes but caused the prairies with their typical fauna and flora to shift eastward and northward. As this shift gradually developed, it also affected the human element in that man was compelled to migrate as did the herds or to change his basic living habits if he were to remain in the present area.

Man had to give much serious thought to the problem of maintaining life as this shift developed, for food became scarcer and harder to procure. This was but one of the factors that brought about a greater diversity of form in the projectile types. True stems were being fashioned to blades so that they could be more securely attached to the shafts of their darts. Various methods of shaping these stems were devised or invented. Some stems had parallel sides, others were contracting, expanding, or bulbar; bases were either expanding, receding, flat, acute angular, bifurcate, concave, convex, or rounded; while the notches were developed either at the base, the side, or at the corners. Such treatments were to be maintained well into the prehistoric and the protohistoric period.

Since the survey party does not have sufficient stratigraphic evidence to back up any of their contentions, they cannot designate which of these various types appeared as outgrowths of the earlier early hunter types. Then, too, there is no sharp line of demarcation between the Archaic and the late paleo-American forms, a fact that is not only to be expected but one that has not been satisfactorily demonstrated.

During the initial survey of the reservoir basin, a large number of flint workshops were visited. The following sites were mapped in Mecklenburg County, Va.: 44Mc12, 44Mc24, 44Mc25, 44Mc26, 44Mc27, 44Mc28, 44Mc29, 44Mc30, 44Mc32, 44Mc33, 44Mc34, 44Mc38, 44Mc40, 44Mc41, 44Mc42, 44Mc43, 44Mc44, 44Mc45, 44Mc46, 44Mc47, 44Mc48, 44Mc49, 44Mc50, 44Mc55, 44Mc56, 44Mc57, 44Mc58, 44Mc59, 44Mc65, 44Mc67, 44Mc68, 44Mc69, 44Mc70, 44Mc74, 44Mc75; Charlotte County,

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[9] The writer objects to the use of the term "Archaic" in that: (1) it is a misnomer, and (2) it leads to a misconception as to age. "If the term 'Archaic' must be used, it should have been reserved for the oldest manifestations in North America, if and when such assemblages are identified" (Sears, 1948, p. 123).

Va., 44Ch4; Halifax County, Va., 44Ha4, 44Ha8; Warren County, N.C., 31Wa1; and Vance County, N.C., 31Va1 and 31Va2.

No pottery was found at any of these sites. Some are definitely flint chipping or manufacturing stations, while others belong to preceramic camp establishments. To distinguish between them the former are characterized as having heavier deposits of castoff chips and flakes, as well as broken stones and discards, than those recognized as preceramic camp establishments. Usually, in the latter, there are a greater number of finished artifacts, while in the former, spoils are greater.

It would also appear that site position in relation to the present stream system has a direct bearing and correlation to relative age. Those located in the uplands and on the higher terraces appear to be much older than those located adjacent to the various streams and the lowlands of the present day. Usually, the many projectile types attributable to paleo-American forms have been recovered in the past from sites located on the uplands and not necessarily in close proximation to streams; those that correlate with the Archaic and later types are usually derived from sites located on lower terraces and the flood plains adjacent to the various streams within the system.

Site 44Mc12 is a flint workshop located well outside the confines of the reservoir limits and was not damaged by the construction of the dam or the resultant reservoir. Its position has been plotted at 78°28′50″ longitude, 36°35′46″ latitude. The area at the time of visitation was partially under cultivation and the surface was well strewn with large numbers of chips, as well as spalls and castoffs. A large number of quartzite points, in all stages of completion, had been collected in the past by the farmer who owns the land, as well as by a number of local collectors. A number of badly decomposed burials were uncovered in the past, after deep plowing had indicated the presence of bones. From what the writer could gather, all of them were tightly flexed and lying on their sides and placed in shallow, round or oval graves. A number of these grave areas were pointed out to the writer, but further digging failed to turn up any burials.

In the uncultivated portion of the site there were numerous piles of castoff quartzite wastage. Testing in their vicinity proved unprofitable, for the ground had only a thin covering of soil and the underlying material consisted of pure quartzite resembling the surface wastage.

Site 44Mc24, located in the Clarksville Magisterial District at 78°31′35″ longitude, 36°36′18″ latitude, covered a large portion of the surface of a small knoll measuring 375 feet long by 200 feet wide, and, at the time the site was visited, it was planted to corn. Numerous stone chips and broken and chipped stones of chert and quartz were lying on the surface of the site. A few projectile points of chert and quartz were picked up from the surface.

Site 44Mc25, located in the Boydton Magisterial District at 78°17′27″ longitude, 36°35′15″ latitude, and occupying a low ridge quite some distance from the edge of the Roanoke River, was covered with stone chips, discards, and fragments of projectile points. These were recovered from an area roughly 100 feet wide by about 100 feet long. We found that there was no depth to the site, as testing showed that all artifacts were confined to the present surface.

Site 44Mc26, located in the Boydton Magisterial District at 78°17′08″ longitude, 36°35′03″ latitude and lying astride a small knoll, covered an area roughly 50 feet long by 50 feet wide. The remains of quartzite chips, spalls, and fragments of crudely made projectile points were scattered over this area. Testing showed that there was no depth to this site, for all remains were confined to the present surface.

Site 44Mc28, located in the Boydton Magisterial District at 78°17′45″ longitude, 36°34′31″ latitude, on a small knoll above

TABLE 3.—*Workshop and preceramic sites arranged numerically indicating type of stones used in the manufacture of artifiacts*

Site No.	Chert		Rhyolite		Chalcedony		Quartz		Quartz crystal		Quartzite		Slate		Schist		Steatite		Granite	
	Chips	Artifacts	Chips	Artifacts	Chips	Artifacts	Chips	Artifacts	Chips	Artifacts	Chips	Artifacts	Chips	Artifacts	Chips	Artifacts	Chips	Artifacts	Chips	Artifacts
44Mc12	----	----	----	----	----	----	----	3	----	----	----	----	----	----	----	----	----	----	----	----
44Mc24	----	9	----	----	----	----	----	17	----	----	----	----	----	----	----	----	----	----	----	----
44Mc25	----	2	----	----	----	----	----	4	----	----	----	----	----	----	----	----	----	----	----	----
44Mc27	----	4	----	----	----	----	----	2	----	----	----	----	----	----	----	----	----	----	----	----
44Mc28	----	1	----	----	----	----	----	2	----	----	----	----	----	----	----	----	----	----	----	----
44Mc30	----	----	----	----	----	----	----	2	----	----	----	----	----	----	----	----	----	----	----	----
44Mc32	----	1	----	1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
44Mc34	----	2	----	----	----	----	----	3	----	----	----	----	----	----	----	----	----	----	----	----
44Mc40	----	2	----	----	----	----	----	2	----	----	----	----	----	----	----	----	----	----	----	----
44Mc41	----	1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
44Mc42	----	1	----	1	----	----	----	1	----	----	----	----	----	----	----	----	----	----	----	----
44Mc44	----	6	----	----	----	----	----	7	----	----	----	----	----	----	----	----	----	----	----	----
44Mc45	----	2	----	----	----	----	----	2	----	----	----	----	----	----	----	----	----	----	----	----
44Mc46	----	11	----	----	----	----	----	2	----	----	----	----	----	----	----	----	----	----	----	----
44Mc47	----	4	----	2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
44Mc48	----	2	----	1	----	----	----	2	----	----	----	----	----	----	----	----	----	----	----	----
44Mc49	----	6	----	3	----	----	----	7	----	----	----	----	----	----	----	----	----	----	----	----
44Mc50	----	2	----	----	----	----	----	2	----	----	----	----	----	----	----	----	----	----	----	----
44Mc55	----	6	----	3	----	----	----	5	----	----	----	----	----	1	----	----	----	----	----	----
44Mc56	----	----	----	1	----	----	----	4	----	----	----	----	----	1	----	----	----	----	----	----
44Mc57	----	1	----	----	----	----	----	7	----	----	----	----	----	----	----	----	----	----	----	----
44Mc58	----	----	----	----	----	----	----	2	----	----	----	----	----	----	----	----	----	----	----	----
44Mc59	----	1	----	----	----	----	----	2	----	----	----	----	----	----	----	----	----	----	----	----
44Mc65	----	2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
44Mc66	400	143	42	104	14	58	9	40	3	6	4	24	4	4	----	1	5	1	----	----
44Mc67	35	1	3	1	----	----	11	----	----	----	----	----	----	----	----	----	----	----	----	----
44Mc68	4	72	7	28	----	11	12	80	----	12	2	11	----	----	----	----	----	2	----	----
44Mc69	12	4	2	----	----	1	4	5	----	----	2	----	----	1	----	----	----	----	----	----
44Mc71	23	16	9	1	4	1	15	3	1	----	----	----	----	----	----	5	----	----	----	----
44Mc72	266	74	50	7	22	19	16	12	9	----	1	1	4	----	----	1	----	----	----	----
44Mc73	56	50	36	24	6	1	1	11	2	2	15	3	11	----	----	----	----	11	----	1
44Mc74	56	13	37	14	10	3	3	8	8	----	1	2	2	----	1	----	2	----	----	4
44Mc75	193	539	53	184	16	74	3	74	20	17	4	13	3	2	----	----	10	1	----	----
West site	----	36	----	11	----	4	----	14	----	2	----	4	----	----	----	----	----	1	----	----
Bluestone Series	----	522	----	105	----	----	----	----	----	----	----	8	----	----	----	----	----	----	----	----

the 266-foot contour, had been farmed a number of years ago but at this time it was covered over with wild hay. Numerous chips were noted and a few fragmentary projectile points were recovered. This site had all the characteristics of a preceramic campsite combined with those of a flint workshop. Piles of broken stones containing traces of charcoal rested upon fire-burned areas that were sterile of any ceramic remains. Chips of stone were rather plentiful in the plow zone, but the underlying material completely lacked any trace of cultural deposits.

All of the other sites listed as belonging to this category conformed very closely to the pattern set forth in the sites described above.

The fragmentary remains of three Archaic celts were recovered from the deposits within 44Mc72 (Field specimens Nos. 3–876, 877, and 2055). These are characterized as having tapering poll ends, which are blunt and are oval in cross section. All have smoothed surfaces but none are polished. No blade sections were recovered. All are of the typical Archaic and Early Woodland types and are associated with many of the dart and arrow points represented in this site.

Cupstones, nutting stones, or anvils vary in size from those about the size of a man's fist to fairly large blocks. None of the stone is purposely worked or shaped. One or more surfaces may bear small saucer-shaped depressions of various depths. The stone chosen for this purpose varied from a granitic base to a highly, heavily crystalized blackish stone. Similar objects have been recovered in the past from Archaic and Early Woodland sites.

A number of thick-walled steatite vessel sherds were recovered from sites 44Mc66, 44Mc72, 44Mc53, and 44Mc75. Those that displayed rim sections were either rounded or flat in outline. Handles occurred as horizontal knobs whose shape varied from round to flat-oval and occupied a position adjacent to or below the rim of the vessel. Vessel shape varied from round to oval, while the depth varied from shallow to rather deep. Evidence of tooling on the exterior is the rule rather than the exception, but the interiors were well smoothed.

Steatite was also utilized in the construction of gorgets, fragments of which were recovered from 44Mc73. One outstanding example is a roughly diamond-shaped specimen with double perforations made by drilling from either side. A number of crude lines were engraved upon one of the surfaces, but it is next to impossible to determine if any design was intended.

A single fragmentary slate pendant (No. 1223) was recovered, and it, like the steatite gorget, bore engraved marks. From this section it is evident that some sort of a diamond-shaped design was intended.

A series of stone artifacts occurs on and in sites that are later than those recognized as being paleo-American and earlier than the assemblage of artifacts associated with pottery making. These forms, in the present instance, have been assigned to the Archaic Period, but their actual relationship to each other may or may not be coeval in that some forms may have had an earlier start, with others originating later. A number of the late starters were carried over through the Transitional Period into Early Woodland horizons only to vanish during Middle Woodland times. Our chief criteria must be the absence of the pottery-making art, indicating that it had not been formulated or practiced by this time.

Bifurcated-based points of Virginia and Alabama appear to be identical in type to those found in the Concho area of Arizona. The Virginia points vary both as to size and chipping. Some are identical to the Arizona specimens, which have been dated around 4000 to 3000 B.C. (Wendorf and Thomas, 1951, pp. 107–114). Points of this type are known to have a fairly wide distribution but not a very dense one. They occur not only in the Eastern United States but in the western sections as well (San José points of New Mexico, Pinto Basin points of California, etc.). Bifurcated points have been reported from sections of Virginia, Alabama, Tennessee, Pennsylvania, and other Eastern States. The fact that they are both so widespread and scarce would appear to indicate that they were made and utilized by a roving hunting-gathering group.

Lewis (1952, p. 61) is inclined to think that this type can be assigned to certain known historic Indian groups, probably the Yuchi and the Shawnee.

> The fact that . . . three of these points were found on Cumberland River sites would seem to rule out the Shawnee, for the earliest maps of Tennessee indicate a large Shawnee population along that River. University of Tennessee archeologists have recovered a small number of these points while excavating sites along the Hiwassee River which were occupied by the Yuchi in the 1500's and 1600's until they were incorporated with the Creeks in the early 1700's. History tells us very little about the Yuchi tribes, but it implies that they did not settle in any particular place for more than a century at most.

Even at that, more than a small number of points should have been recovered if these historic Indian groups had settled in any given place for a hundred or more years. It would appear more likely that these points are much older than any recognized historic Indian group or groups.

The *Pinto Basin* type projectile point (Amsden, 1935, pp. 42–44) of the reservoir area is characterized by having narrow shoulders; usually concave based, the side of the blade just below the shoulder often bears three serrations on each side. They are fairly thick in cross section, and a number show pressure retouch, while others show that an attempt was made at thinning the thick central section by casting off one or more long flakes starting from the base down the central ridge and continuing less than halfway to the tip.

A number of the medium-sized specimens, with bifurcated or concave base, range in length from 40 mm. to 45 mm.; in width from 23 mm. to 38 mm.; and in thickness from 7 mm. to 10 mm. A typical point is characterized by a well-formed parallel-sided stem with either a bifurcate or concave base, the concavity of which is never steep, supporting a triangular or subtriangular blade. Sides of the stem have been partially smoothed by rapping, while those of the blade have been retouched either moderately or to extremes, forming a serrated edge on either side. The stem is trimmed by the removal of one to three thin longitudinal flakes creating a wide groove on each face, which extends from the base to or beyond the level of the shoulders and involves from a third to a half of the total length of each face. Proportionately, the "maximum thickness often equals 30 percent of the total length and probably averages 20 to 25 percent" (Amsden, 1935, p. 44).

Bryan and Toulouse (1943, pp. 269–280) reported on the San José culture as found in nonpottery bearing sites near Grants, N. Mex. Associated with this culture are articles of stone: serrated projectile points, drills, knives, scrapers, and grinding tools. The *San José* point is characterized as being strongly serrated, has a broad tang whose edges are smoothed by grinding, with an indented base, and it varies from 1½ to 2 inches in length. These points (ibid., pl. 19, w-h′) are identical to a number found in the basin, which were made of chert and rhyolite.

Like the New Mexican forms, the Virginia specimens are derived from nonpottery-bearing horizons—presumably the Archaic—but since they are found in association with other points it cannot positively be designated that they are typical of a certain phase of the Archaic as demonstrated by Bryan and Toulouse. It is unfortunate that the elements have reduced the cultural deposits so completely as to destroy the natural placement of the various types in the area.

Recently, Wheeler (1954, pp. 7–14) has called attention to his redefinition of two projectile types, the *Duncan* and *Hanna*, with relation to his earlier *McKean Stemmed* and *Perry types*. The Duncan point is characterized as

> a straight converging or bilaterally convex blade; insloping, non-barbed shoulders; and a straight parallel-sided or slightly expanding stem with shallowly notched base. It is 31.5 mm. or more in total length and the stem represents about one-fourth of the total length. The blade is 15.5 mm. or more in maximum breadth and 4.5 mm. or more in maximum thickness. The point is made on a flake of chert or quartzite. The blade and stem are fully chipped by pressure on both faces from the edges in a random fashion. The blade is lenticular in cross section. The base is notched by pressure chipping on both faces from the base toward the tip. The edges of the blade are generally thin, straight, even, and sharp. The sides of the stem are usually smoothed by retouching or grinding.

Similar points have been found not only in the John H. Kerr Reservoir basin but other portions of southern Virginia and northern North Carolina; the Keyhole Reservoir in northeastern Wyoming; the Angostura Reservoir area in southwestern South Dakota; three sites in south and east-central Montana; from Signal Butte, level 1, in western Nebraska; near Boysen Reservoir area in central Wyoming; and from Hells Midden, levels 4 and 5, in northwestern Colorado.

The Duncan point, apparently partly contemporaneous with the *Pedernales Indented Base* point of Kelley (1947, pl. 10, *c*) does not have the broad triangular blade and barbed shoulders of the latter and is noted more in the northern Plains, while the Pedernales is restricted more to the Round Rock Focus of central Texas.

The Hanna Point, first recognized by Wesley L. Bliss in east-central Wyoming and subsequently found in Nebraska, South Dakota, and southern Virginia, is characterized by—

> a straight converging and incurving blade, straight or insloping and slightly barbed shoulders; and an expanding stem with shallow notched or straight, thinned base, is 25.0 mm. or more in total length, with the stem covering one-fourth to one-half of the total length, 13.5 mm. or more in maximum breadth, and 3.5 mm. or more in maximum thickness. Blade and stem are either fully chipped by pressure in a random manner on both faces or fully chipped on one face and retouched only along the edges of the other face, or retouched only along the edges of both faces. The base is notched or thinned by pressure chipping on both faces from the base toward the tip. The edges of the blade are generally thin, straight, even, and sharp, while the sides of the stem are usually smoothed by retouching or grinding. The blade is lenticular or plano-convex in cross section. [Wheeler, 1954, p. 8 and fig. 2.]

Wheeler surmises that—

> On stratigraphic and typological grounds, the three points seem to have originated in the following order: first McKean, then Duncan, and then Hanna. When these points have been dated individually by the radiocarbon technique, they may be useful as index artifacts in identifying and dating assemblages of the little known "Intermediate Lithic period" in the Plains area (Champe, 1946, fig. 17). [Ibid., p. 10.]

In the collection are a number of specimens that resemble both the Lake Mohave and Silver Lake types.

> The Lake Mohave type is characterized by a long, tapering stem, produced by shouldering the point (usually very slightly), just below the center of its vertical axis. This results in a generally diamond-shape form, with more shoulder than blade. The form is not highly standardized, wavering frequently between the oval on the one hand and the Silver Lake type on the other. It obviously bears a close relationship to the latter type, both in form and in associations, and may be a variant of minor consequence, but we are convinced that it has an individuality meriting independent recognition. [Amsden, 1937, p. 80, and pl. 41.]

Those found in Virginia do not approach in size the type specimens but they do correspond to the type form, both in chipping techniques and in general outline.

The *Silver Lake* forms have a more definitive shoulder and less basal taper than the *Lake Mohave* type.

> The base comprises never more than half the whole length, usually about a third. It is always somewhat rounded at the butt and in material and workmanship is closely akin to the Lake Mohave with the better specimens showing good pressure retouch and the poorer ones showing only percussion. [Amsden, 1937, p. 84.]

Both forms appear to have a rather wide dispersal but do not appear in any depth. Comparable forms have been recovered and reported not only from Virginia and North Carolina, but they have been noted from West Virginia, eastern Tennessee, Vermont, and Alaska as well. Mrs. Campbell (1936, p. 297) indicates that the Silver Lake culture—

> may possibly antedate the Pinto Basin (Lake Mohave) since the sites are located on much higher terraces and lack both manos and metates and the accompanying scrapers which approach more definitely old European forms.

A number of the Bluestone Creek drainage points resemble the *Nebo Hill* point in outline (Shippee, 1948; Chapman, 1948) and as a rule the width is about one-sixth of the length and varies, in cross section, from elliptical to lenticular. Flaking is not always regular over the entire surface and secondary chipping or retouching occurs only on the better-made specimens. The Nebo Hill point has been estimated to range in age from 3,000 to 4,000 years old, but so far the Virginia and North Carolina specimens have not been dated.

Other points from the Bluestone Creek drainage are long, lanceolate blades with moderately parallel sides whose basal terminals are either rounded, slightly concave, convex, or project at an obtuse angle. Technique of manufacture is not consistent. Some indicate that they were fashioned by percussion, others by pressure, and a few have been formed by rapping. In contrast to percussion, this rapping process is brought about by dealing short, well-directed blows directly downward and vertical to the long axis of the artifact, resulting in a crushing rather than a chipping off of the unwanted portions.

C. H. Webb (1948, p. 230) has described two unusual types of chipped stone artifacts which were thought to be confined to northwestern Louisiana and contiguous areas. These are the Albany type beveled scraper and the *San Patrice* type projectile point, which are thought to derive from the late Archaic or Transitional Horizon.

> The San Patrice point is especially interesting because, although typologically different from the Folsom or fluted points, it seems to represent a late survival in this area of the traits of concave base, smoothed basal margins, and thinning of the basal segment by removal of longitudinal flakes. . . . Others (Martin, Quimby and Collier, 1947; Griffin, 1946) have suggested that Folsom and Yuma artifacts may have persisted to a later period in the eastern United States than in the West, since they have been found in the lower levels of several eastern Archaic sites.

Afton points, named from examples found by Holmes (1901, p. 246) in a ceremonial spring near Afton, northeastern Oklahoma, are characterized as large-sized projectile points with an "almost rectangular body, an abrupt triangular point, a wide, square base, and concave lateral margins. The points are rather wide and thin." They can be further characterized as having prominent barbs, with an expanding base, and sides roughly parallel to the squared base surmounted by a triangular-shaped point, the whole presenting an angular outline that is very prominent.

Points fitting this description have been found not only in the reservoir but in the Ohio Valley as well. They occur in prepottery horizons and "may be assigned an age of several thousand years" (Bell and Hall, 1953, p. 7).

Holmes suggested that these "spear points of unique form, very probably were made especially for sacrificial purposes," for they were not numerous in the spring deposit. Some showed that they were freshly resharpened along the edges, as there was a distinct color differential showing in earlier darker original chipped surface and the newer, brighter, rechipping.

A number of medium-sized, stemmed projectile points, ranging in length from 40 to 45 mm., in width from 23 to 38 mm., and in maximum thickness from 7 to 10 mm., are characterized by having a well-formed parallel-sided stem with straight or concave base, the concavity of which is never very deep. They are thinned by the removal of one

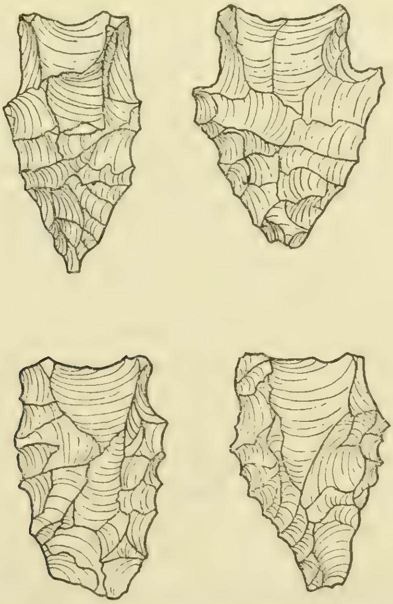

FIGURE 19.—Huntley points—reminiscent of San Patrice points of Suhm and Krieger.

to three thin longitudinal flakes, creating a wide groove on either face which extends from the base to or beyond the level of the shoulder and involves from a third to a half of the total length of each face. Sides of the stem have been partially smoothed by rapping, while those of the blade have been retouched, either moderately or to extremes, forming a serrated edge on either side. It is suggested that these points be called "Huntley points." Points of this type occur within the Archaic Horizon and resemble the San Patrice points of Suhm and Krieger (1954).

A number of large triangular points, having either straight or convex sides and flat or concave bases terminating in either sharp or blunt points, occur within various sites in the reservoir basin. The straight-sided types vary from 41 to 61 mm. in length, 22 to 25 mm. in width, and from 6 to 10 mm. in maximum thickness. The convex bluntly pointed type varies from 41 to 50 mm. in length, from 23 to 24 mm. in width, and from 7 to 8 mm. in maximum thickness. Both chert and rhyolite were used in the manufacture of these forms. Chipping was mostly of the percussion type with an occasional pressure retouching along the sides and edges. These straight-sided points first appeared in the Archaic Horizon and carried over into Early Woodland where they eventually disappeared.

In speaking about the convex-sided blades, Ray (1934, p. 110, pls. 18, 102) discusses a number of longer blades with these same characteristics. He calls these "scooped out based knives." A particular specimen

> is 4 inches long, 2⅛ inches wide near the base, just above where the scooping out of the base begins. Its thickness at the same place is ¹¹⁄₁₆ of an inch. . . . The artifacts are all deeply patinated and the fractured surfaces are usually softened by time. . . . the writer would suggest naming it the *Clear Fork culture*.

Regarding the Clear Fork projectile types, Roberts (1940, p. 70, figs. 7, *4*, *5*, *6*, *7*; and 8) illustrated a number of them. He stated that a number of points belonging to a third series are characterized by being triangular in outline with straight bases and having long slender channels extending up the faces from the base, edges are carefully retouched—something that does not appear in the Clear Fork types 1 and 2 or in type 4. He is of the opinion that "this class suggests the reworked tip ends from actual Folsom points, and it is possible that the type originated from such re-worked forms" (ibid., p. 74). A comparable form of this type 3 Clear Fork type was recovered from the surface of site 41Mc72. This specimen is of a dark-gray chert, 35 mm. in length, 15 mm. across the base, and 5 mm. in maximum thickness; in the channeled area it measures 3 mm. in thickness. While one of the basal corners is missing, it would indicate that this specimen was much wider than the measurement given above. The edges of this particular specimen are finely retouched and the point could easily be taken for a type of "Folsom."

A few microlithic triangular points "are much too small for arrowheads and may have been used as points of poison blowgun darts" (Ray, 1934, p. 108). Swanton (1946, pp. 585–586), after a perusal of the literature as to the use of blowgun darts and their use by the American aborigines, has noted a number of instances where either blowguns were alluded to or actually noted among the Indians of the Southeast. The blowgun, itself, is usually made of a section of cane about 7 feet long and cleared of its inward divisions at the joints. The dart is a small arrow "feathered" with either wild cotton, the silk of thistledown, or some similar material. The Indians were so adept that they were able to bring down, with ease, small game within a range of 15 to 20 yards.

Several typical archaic points from the Bluestone Creek sites are characterized as being rather large, both as to length and width, having straight or slightly convex sides and surmounted with parallel-sided stems, terminating in either a square or slightly concave base. Most of them are crudely fashioned by percussion usually, but there are a number of exceptions that indicate that great care was exercised in their finishing.

Comparable points have been found at both the Stallings Island (Claflin, 1931) and Lake Springs sites (Miller, 1949 d) on the Savannah River in eastern Georgia and western South Carolina. The typical Stallings Island stem is characterized as being square based, while those with a concave base form a variant of the type. A slightly contracting stem terminating in a rounded base, which occurs quite frequently, may be considered as a second type of this form.

Blade shape varies somewhat but all are more or less triangular in outline. In most specimens the sides diverge from the tip in a straight line, while in others the sides are slightly convex, a tendency that occurs often enough to be considered as a variant of the type. Blades are thick and lopsided with greater accent placed upon one shoulder, with the opposing member either weak or nonexistent. The lopsidedness of shoulders is one of the chief characteristics of the Archaic forms within the John H. Kerr Reservoir Basin and surrounding areas. Some of the blades may have functioned either as knives, spearheads, dart points, or even as digging tools.

The tips on a number of the specimens are fairly highly polished; on others the tips are complete; while on still others, the tips have been broken off and polished afterward. It is believed that this treatment, rather than being intentional, was the direct result of the blades having been used as digging tools.

Chert, rhyolite, and quartzite were used in their manufacture. Large numbers of the rhyolite and quartzite forms have knobby bulges or protuberances on their surface as though the stone did not chip evenly but formed these uneven surfaces through faults in the rock itself. In others these humps appear to have been left intentionally, but we cannot explain their reason for leaving them.

The Stallings Island, or Savannah, points from Virginia are characterized as:

STRAIGHT STEMMED POINTS:

Right angle shoulders.

One shoulder more prominent than the other.

Only one shoulder indicated.

Outline: Like a triangle with either a straight central stem, a straight off-center stem, or a moderately converging stem with rounded base.

Lateral edges: Vary from straight to slightly convex.

Base in dominant type: Straight to moderately concave.

Base in less dominant type: Slightly rounded to well-rounded.

Stem: Varies from 50 to 75 percent as wide as the blade and less than 30 percent of the total length of the point.

Length: Varies from 111 mm. to 62 mm.

Width: Varies from 34 mm. to 41 mm.

Thickness: Varies from 11 mm. to 15 mm.

Distribution: Occurs in Late Archaic and Early Woodland horizons along the eastern coastal area and well into the western sections of the east. Similar types have been reported from the Plains and occur in all levels at Signal Butte (Strong, 1935). Comparable points have been reported from the prehistoric Piney Branch quarries in Rock Creek Park, Washington, D.C. (Holmes, 1907), in the Seldon Island site (Slattery, 1946), in the Marcey Creek site (Manson, 1948), as well as at numerous nonpottery-bearing sites along the Potomac, the James, and the Roanoke and Meherrin River valleys. They have not only been noted in numerous nonpottery-bearing sites in North and South Carolina, Georgia, Tennessee, and Kentucky, but they occur in similar sites to the northeast of the area running well up into New York State.

Several types are represented by single specimens which are unique in shape. Since none of these have been reported from other areas and all are surface finds, it will be difficult to indicate cultural linkages. The only positive fact is that they were all derived from prepottery sites; hence, they must be either Archaic or paleo-American forms. Practically all of them are made of chert or rhyolite, which in itself would tend to place them in either of these categories. It is true that some of these forms were carried over, in modified form, into the Transitional and Early Woodland Periods, but they did not last very long for they soon disappeared from the horizon and the notched and stemmed forms assumed dominance. Working techniques consisted of either pressure flaking or rapping, with very little emphasis placed on percussion chipping.

In this group are what may be called a "Hopewellian turkey tail point" from site 44Mc75. This rhyolite form is characterized by being lanceolate in outline, with small basal notches near the terminus, which were formed by constricting the sides to form a short, straight-sided, blunt basal stem. A slight amount of basal thinning was attempted and the chipping scars are not long but rather short. Chipping was performed by transverse pressure terminating along a low median line giving the projectile a lenticulate cross section. Secondary chipping along the edges border on the minute in size, giving the blade an even, keen cutting edge. In overall dimensions, it measures 58 mm. in length, 20 mm. in maximum width—which occurs about midway down the object—and 8 mm. in maximum thickness—which occurs about one-third the distance from the butt to the point. There is a certain amount of decomposition of the stone on both faces and more so toward the lower half of the blade.

Another rhyolite form from this same site resembles, somewhat, in shape the tip of a 16th-century metal halberd pike head. This is a long, 69-mm., narrow, parallel-sided blade terminating in a short, blunt tip formed by bringing the parallel edges to a quick stubby point. On either side of the stem are prominent shoulder barbs almost at right angles to the stem. Since there is only a rudimentary portion of the stem present, the true form the original assumed cannot be determined. This point has a number of early characteristics, namely: the stubby tip, parallel sides, and the various methods of chipping. These same characteristics also occur in the Clovis, Folsom, and the many Yuman forms. The anomaly is the presence of shoulder barbs and an undeterminable stem. This blade appears to have been initially fashioned by percussion and later both pressure chipping and rapping were used in the completion of the object. The stubby tip and the parallel edges, which are fairly even and straight, were subsequently subjected to very fine retouching.

A fairly large superficially triangular chert blade, side-notched, serrated, and beveled on the left side when the blade is held with the tip uppermost, is present in the collection. It is the only beveled blade recovered from the entire reservoir basin and hence it is unique. The blade was chipped into shape by using broad, shallow flakes making the surface practically flat and of uniform thickness. The beveled surface measures 4 mm. in height and was formed by pressure chipping at the same time that the edge was serrated. A certain amount of basal thinning is manifested in a number of parallel flakes, which does not reach beyond the shoulder. This particular blade is 66 mm. long, 24 mm. across from one shoulder to the other, and the basal width probably measures slightly over 25 mm. when complete. A thickness of 5 mm. is uniform throughout.

The side notches, 7 mm. wide and 3 mm. deep, are more than twice as wide as they are deep. They are carefully thinned, showing no evidence of retouching, and create definite shoulder barbs below a straight base.

Side-notched triangular blades are few; some have straight sides, while others have slightly convex sides. Bases may vary from straight to concave, while the notches are never very deep but rather wide. Practically all have been pressure chipped in that well controlled chipping scars are present. Chipping was performed from alternate sides, forming a medial ridge which may be either high or relatively low. In either case the tips are sharp and well formed, and a certain degree of basal thinning is present. Secondary retouching is practically nonexistent.

QUARTZ INDUSTRY

Quartz crystals were utilized fairly early by some of the first occupants of the basin and immediate vicinity. A number of fluted points made of this material have been recovered and reported. Quartz and quartzite, as a rule, were not widely used until fairly late in the Archaic and continued in use as supplementary material up to the advent of the white man.

Among the quartz and quartzite forms were some of the usual late Archaic as well as most of the Woodland types. It is surprising the degree of skill these aborigines developed in working this very refractory material, since it does not break on true fracture cleavage planes.

Not all of the sites investigated made use of quartz in the manufacture of projectile points, but we noted that chunks of this material were used as hammerstones, and occasionally broken bits of it were found scattered throughout the site or sites. Usually, hammerstones were natural hardheads or nodules picked up from some streambed. They were of a size that fitted easily into the hand. When used for this purpose these nodules could take severe blows without being shattered or suffering too many ill effects.

Milky quartz blades and scraper forms probably first appeared during the Transitional and Early Woodland Horizons and persisted, along with the various chert forms, throughout the occupational span.

A single unusual quartzite tool of comparable shape to one illustrated by Moir (1927, p. 95, fig. 38, *d*) and termed a "*plane*" was found at site 44Mc66. This particular tool was made from an irregularly shaped flake whose three sides were bilaterally flaked, leaving the fourth side and the basal edge untouched. None of the working edges have a straight outline. All have varying degrees of curves in order to accommodate whatever type of surface is to be treated. A large prepared tip is present; whether it represents a type of graver to be used to make grooves or a perforator to make holes is not known. Judging from its primitive form, implements of this type could have served a number of purposes; rather than being fastened to a haft of wood or some similar material, they probably were grasped in the hand while in use.

Fragments of fine-grained sandstone *hones* were found mostly at site 44Mc72. They were carefully shaped with sides precisely smoothed leaving the honing surface perfectly flat or even. Usually they are tapering in general outline terminating in rounded points. The one exception is oval in cross section with one of the ends battered into a crude sort of hammer.

One hone has three narrow, parallel grooves existing 20 mm. down the long axis of the stone. Crossing these grooves at a diagnonal are two other parallel grooves, neither of which is over 1 millimeter in width nor over that in depth. These grooves were formed by applying some sort of sharply pointed object or objects to the stone, since the bases are narrower at the bottom than they are at the top and formed a rough V-shaped trough.

As far as our activities in the Reservoir area are concerned, stone *picks* were to be found only at the sites on the uppermost terraces alongside Bluestone Creek. These were manufactured by percussion flaking from cores and large flakes of chert and rhyolite, all of which display fairly sizable chipping scars. Usually they are characterized by being somewhat compressed almond-shaped, roughly round to oval in cross section, and ungrooved, with no evidence of ever having been hafted.

Celts are roughly of this same general shape and are characterized by being much flatter in cross section. Only the blade section has been smoothed. Polishing has been acquired through usage. The cutting edge is convex in outline, sharp, formed by the beveling of the bilateral surfaces and never extending any great distance up the sides of the tool. Celts of this period usually measure about 95 mm. in length. A smaller one of rhyolite measures 77 mm. long and displays no smoothing or abraiding along the crescentic flat blade section. Whether this object can truthfully be termed a celt is questionable, for it could have served equally well as a small chopper or as a chisel.

The Bluestone Creek sites have given us a number of two side-notched stone tools which are roughly sagittal in outline but are much too large and heavy to serve as axes. The larger was fashioned from a chert core by means of percussion chipping, and measured 84 mm. in length, 45 mm. in width across the basal section, 49 mm. in width across the shoulders, and 25 mm. in maximum thickness. It is lenticulate in cross section both crosswise and lengthwise. In general outline the base is square, joining the sides at rounded corners, which immediately proceed downward into long, shallow notches that terminate at the top of the shoulders, which in turn, extend downward along convex sides to a blunt tip. There has been a certain amount of basal thinning, bringing the base to a fine edge similar to those surrounding the tool which, in turn, reflect a number of small, but by no means fine, chips. Originally, the tip must have terminated in a dull point but this was broken off before the object was found.

The second and smaller of these two objects was fashioned from a naturally flat segment of chert necessitating only the minimum of work to convert, by percussion flaking, into a tool roughly corresponding in outline to the one just described. Its base is roughly straight across and slants upward but slightly, terminating into two earlike knobs, one of which is more pronounced than the other. These knobs rest atop two shallow side notches. Sizes of these notches are not uniform. The notch beneath the larger projection is both deeper and wider than its corresponding partner opposite. The blade is sagital in general outline and terminates in a pointed rounded tip.

From the side notches on both objects it is easily imagined that tools of this sort were originally hafted ax fashion, the bases being inserted between the split sides of a wooden handle. My only supposition as to their use is that they were either tools of warfare or for use in splitting rods or poles.

TRIANGULAR POINTS

This division includes all of the smaller Late Woodland forms rather than the larger triangular forms of the Transitional and Early Woodland Horizons (pl. 50). In general, all are triangular in outline. Closer examination reveals a number of variations in form. Variations may occur at the basal ends or on the adjoining sides or edges. All types of triangles are included: isosceles, equilateral, or whatever combination of side edges to the base line that can be formulated. Some are gems of chipping, while others are extremely crude, especially whenever faults occur in the original stone that show up during some stage of manufacture.

Most of the chert forms were made from thin chips or flakes. Only the smallest amount of effort was expended to convert these into the desired shape. This means that only one surface was chipped, while the other was retouched along the edges to give it the desired keenness. Thicker forms, usually of quartz, were first shaped by percussion flaking and later retouched along the edges.

Side-edge treatment shows the greatest variation in that the sides are either straight (square), concave, convex, or serrated. Generally, whenever concave sides appear the tips of the expanded base are converted into definite barbs, and whenever serrations appear they may be either few in number or as many as the sides will hold.

True symmetry is not always present, so true types are relatively scarce.

From a study of the small triangular forms, 15 distinct types may be noted, as shown in figure 20.

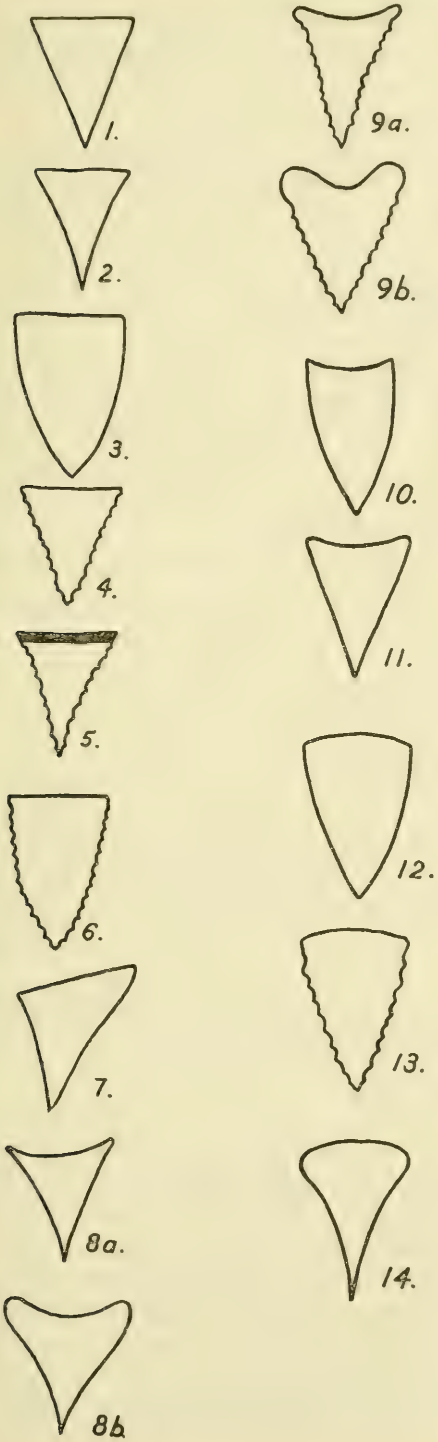

FIGURE 20.—Typological series for triangular points. *1*, Square base and square edges; *2*, square base and concave edges; *3*, square base and convex edges; *4*, square base and straight serrate edges; *5*, square base and serrate concave sides; *6*, square base and serrate convex sides; *7*, square base with one edge longer than the other; *8a*, concave base and concave sides with sharp shoulders; *8b*, concave base with concave sides and rounded shoulders; *9a*, concave base and serrate concave sides, sharp shoulders; *9b*, concave base, serrate concave edges and rounded shoulders; *10*, concave base and convex sides; *11*, concave base and straight sides; *12*, convex base and convex sides; *13*, convex base and convex serrated sides; *14*, convex base with concave sides. (*15* (not shown), embraces all asymmetrically sided forms.)

All forms are stemless and notchless, essentially triangular in outline, and have modifications in the specifications of basal and side edges. In overall length they range from 40 mm. to 17 mm., with thickness an ungoverned variable.

- Type 1. Straight base and straight sides. The ratio of the one to the other determines both the length of the blade and the general width of the point.
- Type 2. Straight base and concave sides.
- Type 3. Straight base and convex sides.
- Type 4. Straight base and serrate straight sides.
- Type 5. Straight base and serrate concave sides.
- Type 6. Straight base and serrate convex sides.
- Type 7. Straight base with one edge longer than the other.
- Type 8. Concave base and concave sides.
  - Subtype 8a. Concave base with sharply pointed barbs joined by concave sides.
  - Subtype 8b. Concave base with rounded barbs joined by concave sides.
- Type 9. Concave base and serrate concave sides.
  - Subtype 9a. Concave base with sharply pointed barbs joined by serrated concave sides.
  - Subtype 9b. Concave base with rounded barbs joined by serrated concave sides.
- Type 10. Concave base with convex sides.
- Type 11. Concave base with straight sides.
- Type 12. Convex base with convex sides.
- Type 13. Convex base with serrated convex sides.
- Type 14. Convex base with concave sides.
- Type 15. Embraces all asymmetrically sided forms.

This classification is offered as an aid for convenience of description in general terms, since there is much overlapping in form from one to the other, so it must be accepted as is unless greater divisions are to be made stressing every slight difference in form that is bound to occur.

Distribution is rather widespread throughout the East and Southeast wherever Late Woodland or Mississippian influences have been felt.

DISCUSSION

The chipped-stone artifacts in the John H. Kerr Reservoir Basin present a gradient from some of the Paleo-American forms (or Early Hunter) to the Late Woodland types, reflecting not only all degrees of skill in the various chipping techniques but also in style and variation of form as well. This is best exemplified in projectile types, scraper forms, burins, knives, choppers, and hand axes. Symmetry and asymmetry of form may have been both deliberate and accidental. Under the deliberate, can be listed, offhand, such forms as types 1 and 2 of the Sandia, Manzano, Pinto Basin, and Lake Mohave. Generally considered as accidental are such forms attributed to cutting tools such as knives and spear points resembling the Savannah or Stallings Island–Lake Spring types.

From the present study it has been noted that a majority of the very early forms are exclusive of notches in association with definable stems, and that when notches were introduced there emerged some connective with a changeover toward lighter points that may be indicative of a reasonable relationship coeval with the appearance of a lighter lance and the later bow and arrow.

Many forms of scrapers have been found that tend to grade one into the other. All are characterized by being steeply retouched on the functional end or ends. Such forms were fashioned from very large flakes and cores, as well as from very small chips. The functional section tends to be either convex, concave, or straight in outline, depending upon the use to which each particular instrument was intended. Some were definitely used solely in the preparation of hides of sufficient size to warrant large scrapers; others were used for smaller hides; while still others were used in woodworking, bone, and horn; and there is a possibility that they were also used in the preparation of various plant fibers for weaving.

Either in association with scrapers or entities unto themselves are, what have been termed, gravers. These are small, sharp, bilaterally chipped projections with flat bases and with various types of tips. A number of uses have been attributed to them. It has been pointed out that they could have served as the puncturing implements in tattooing of their human possessors. They could also have served as perforators of hides and similar substances in lieu of needles as an aid in sewing, and they could have functioned as instruments used in the engraving of bones, such as were found at the Lindenmeier site in Colorado. All these uses are conjectural. We are not cognizant of their origin nor do we know for a certainty what their intentional function was.

Then, too, we have a number of burin types that have been called gravers. From the nature of the burin surface, one would suppose that engraving must have been their initial function, but again, there is no certainty. They might have served as cutting instruments, those that were large enough. From the multiplicity of form they could have had any number of functions. Who can tell?

Choppers and hand axes are both intriguing and fascinating in that the types found within the basin correspond with identical forms in various of the early horizons of the Old World. To state positively that the Virginia specimens are of comparable age as those of Europe is out of the question, but it is hard to deny that the alteration present in the cortex of the cherty stone artifacts does not indicate a greater age than is presently accepted for the early cultures of the New World.

Everyone who has seen these objects is immediately struck with this feature and agrees that great age is indicated.

The various Archaic and Early Woodland forms are present in sufficient numbers to show that the basin was occupied by these groups while the small, basic isosceles triangular forms of the Late Woodland and early Mississippian are variable enough to establish a number of types indicating a refinement in the original concept of form.

PROJECTILE CHARACTERISTICS

ARCHAIC: Some may have functioned as knives.

Stemmed points: Most of these are large with straight sides and straight based stems. The so-called "fish-spears" are relatively thick narrow points with rounded stems and diamond-shaped points, relatively long, narrow points with slight stemming and narrowing near the base.

Outline: Body is sagittate in form and essentially triangular.

Lateral edges: Edges are basically straight but may vary to convex with an occasional serrated form occurring.

Bases: These are of many forms: straight, slightly convex, or slightly concave (fig. 19).

Stems: When stems occur they may vary from parallel sides to sides which are slightly concave, or slightly converging.

Notches: Those with notches are moderately wide to wide.

Shoulders: When shoulders are present on stemmed varieties they vary from right to obtuse angles.

Length: Varies from 39 mm. to 61 mm.

Width: Varies from 24 mm. to 38 mm.

Thickness: Varies from 5 mm. to 9 mm.

Material: Usually chert.

Distribution: These forms are to be found throughout the eastern littoral as well as those farther interior. Western forms comparable to these have been noted in the literature.

EARLY WOODLAND: Again, some of these may have functioned as knives.

Outline: The Archaic form still is retained unmodified.

Lateral edges: They resemble those of the Late Archaic in form and in treatment.

Bases: Bases may vary from straight to convex with an occasional specimen displaying a slight concave base.

Stems: Stems of varying lengths and widths appear to be more universal.

Notches: These are moderately wide to wide.

Shoulders: Shoulders may vary from right to acute angles.

Length: Varies from 23 mm. to 74 mm.

Width: A variation from 18 mm. to 37 mm. occurs.

Thickness: Ranges from 5 mm. to 10 mm.

Material: This is chiefly chert but some quartz or quartzite does occur every now and then.

Discussion: Stone tools still retain their characteristic Archaic form while bone tools appear to increase somewhat in numbers as well as in complexity.

Distribution: Overlaps that of the Archaic forms and cultures.

MIDDLE WOODLAND: Some may have functioned as knives.

Outline: There is very little change in their general outlines from those of the preceding period.

Lateral edges: There is a general tendency for the edges to run more to the convex but some straight-sided forms occur.

Bases: These show very little change or modification from the earlier forms.

Stems: There is a slight reduction in overall size.

Notches: Notches are becoming shallower and less pronounced.

Shoulders: Whenever present these tend to be more rounded.

Lengths: The range is not too great, varying from 46 mm. to 60 mm.

Width: Varies from 21 mm. to 35 mm.

Thickness: Ranges from 7 mm. to 12 mm.

Material: Runs mostly to cherts with some quartzite being used.

Discussion: Lengths are fairly uniform, widths are somewhat narrower, while the thickness has remained static.

Distribution: Points of these types occur throughout the East and into the upper Plains areas.

LATE WOODLAND: The larger forms are usually knives.

Outline: These tend to be mostly on the triangular side with some stemmed varieties.

Lateral edges: Vary from straight, concave, to convex, to serrated.

Bases: Resemble somewhat the modified sides.

Stems: Stemless forms occur. Those with stems are usually only ⅙ or less than the overall length of the point.

Notches: Whenever these occur they are moderately wide to wide.

Lengths: Vary from 28 mm. to 47 mm.

Widths: Vary from 17 mm. to 36 mm.

Thickness: Varies from 4 mm. to 10 mm.

Material: In southern Virginia this runs mostly to cherts with some quartz and quartzite forms present.

Discussion: There is a slight increase in length, width, and thickness over the preceding forms. There is also a greater variation in form with greater stress being placed upon the small isosceles triangular forms.

MIDDLE MISSISSIPPIAN:

Outline: Basically all are isosceles triangular in outline.

Lateral edges: Vary from straight, triconvex, triconcave, or serrated.

Lengths: Quartz forms vary from 18 mm. to 33 mm.
Chert forms vary from 20 mm. to 25 mm.

Widths: Quartz forms vary from 12 mm. to 19 mm.
Chert forms vary from 15 mm. to 21 mm.

Thickness: Quartz forms vary from 4 mm. to 6 mm.
Chert forms vary from 2 mm. to 5 mm.

Material: Quartz and chert.

Distribution: These forms are found throughout the Mississippian cultures in the Southeastern United States and the Middle Atlantic areas as well as in the Midwest.

Stemless—notchless:

1. Triangular.
2. Triangular—triconcave.
3. Triangular—triconvex.
4. Overall ovate.
5. Basically ovate.

MIDDLE MISSISSIPPIAN—Continued

Side-notched, bifurcate flaring base:

Expanding stem, slightly concave base.

Expanding stem, slightly convex base.

Corner-notched, expanding stem, slightly concave base:

Parallel sided stem, slightly concave base.

Straight stem, right angle shoulders: Simple barbed.

Triangular points:

Stemless, notchless.

Outline—essentially triangular.

Lateral edges: Straight, triconcave, triconvex, overall ovate, or basically ovate.

Base: Straight, mildly concave, or mildly convex.

Edge treatment: Rechipped or serrated.

Distribution: Widespread wherever Late Woodland and Middle Mississippian influences have been felt.

Side-notched, bifurcate, flaring based points:

Outline: Like the general triangular with a Y-shaped stem attached to base, an expanding stem attached to a slightly concave base, or an expanding stem attached to a slightly convex base.

Lateral edges: Either convex or serrated.

Base: Moderately to deeply concave.

Notches: Moderately wide to wide.

Distribution: Wide but not dense. Found in sites in Virginia, Tennessee, West Virginia, Alabama, as well as in some of the northern Plains areas.

Straight-stemmed, right-angle shoulders:

Outline: Like the general triangular with a straight stem attached forming either right-angle shoulders or simple barbs.

Distribution: Widespread.

TABLE 4.—*Triangular quartz points from 44Mc14*

Catalog No.	Length	Width	Thickness	Edge description	Base description
	Mm.	*Mm.*	*Mm.*		
(1)	7.0	9.0	3.0	Straight	Straight.
137	12.0	11.0	4.0	do	Do.
337	17.0	14.0	4.5	Serrate	Concave.
456	17.0	16.0	4.0	do	Do.
218	17.5	10.0	3.5	do	Straight.
28	18.0	15.5	4.0	Straight	Do.
331	19.0	16.0	4.5	Serrate	Concave.
87	23.0	17.0	4.0	do	Straight.
131	23.0	16.0	4.5	Straight	Do.
394	24.0	18.0	6.0	Serrate	Concave.
321	25.0	16.5	5.0	do	Do.
339-6	26.0	15.0	4.0	do	Do.
339-1	27.0	18.0	5.0	do	Do.
339-4	27.0	16.0	5.0	do	Do.
339-3	29.0	17.0	5.0	do	Do.
339-2	29.5	17.0	5.0	do	Do.
100	30.0	19.0	6.0	do	Do.
339-5	33.0	17.0	5.0	do	Do.
670	67.0	42.0	15.0	Convex	Straight.
Average	22.4	15.4	4.5		
Largest	33.0	17.0	5.0		
Smallest	7.0	9.0	3.0		

[1] No catalog number.

TABLE 5.—*Triangular chert points from 44Mc14*

Catalog No.	Length	Width	Thickness	Edge description	Base description
	Mm.	*Mm.*	*Mm.*		
167	18.0	11.0	2.5	Serrate	Straight.
406	20.0	13.0	3.0	Straight	Do.
339-8	20.0	20.0	3.0	Concave	Do.
381	21.0	17.0	4.0	Straight	Do.
10	21.0	17.0	4.0	Serrate	Concave.
285	22.0	16.0	3.5	do	Straight.
6-1	22.0	16.0	5.0	Straight	Do.
94	22.0	15.0	4.0	Serrate	Do.
242	23.0	16.5	5.0	Even	Concave.
385	23.0	15.0	5.5	Serrate	Do.
80	23.0	20.0	4.0	Even	Do.
213	23.0	12.0	2.75	Serrate	Do.
159	24.0	17.0	5.0	do	Convex.
59-1	24.0	12.0	5.5	do	Concave.
70	25.0	14.0	2.0	Straight	Straight.
139	25.0	21.0	5.0	Concave	Do.
392	26.0	17.0	4.0	Serrate	Concave.
413-1	26.0	24.0	4.5	Straight	Do.
180	30.0	17.0	5.5	Even	Deeply concave.
413-2	31.0	17.0	4.0	Serrate	Concave.
199	33.0	18.0	5.0	do	Do.
126	34.0	26.0	6.5	Even	Do.
449	35.5	18.5	6.5	do	Straight.
Average	25.0	17.0	4.4		
Largest	35.5	18.5	6.5		
Smallest	18.0	11.0	2.5		

TABLE 6.—*Gypsum Cave, Skipwith—Jeffres, Gary points*

Catalog No.	Length	Width	Length of stems	Catalog No.	Length	Width	Length of stems
	Cm.	*Cm.*	*Cm.*		*Cm.*	*Cm.*	*Cm.*
1251	2.7	1.5	1.0	336b	5.3	2.4	1.6
F-3, 862d	4.0	1.75	1.4	44Mc14	7.8	2.45	1.4
1646	3.9	1.8	1.6	F-3, 891	7.6	2.5	1.6
F-3, 862c	3.4	1.85	.7	336c	7.6	2.6	1.8
F-2	4.6	1.9	1.8	1794	6.9	2.65	2.0
1644	4.6	1.9	1.6	1641	5.3	2.7	1.7
F-3, 862e	3.8	1.95	1.2	1240	5.8	2.8	1.5
3067	----------	2.0	1.9	1581	5.6	2.8	1.9
F-3, 862b	3.7	2.0	.8	F-3, 890	7.8	2.9	1.7
3661	----------	2.1	1.6	336a	8.3	3.95	2.0
F-3, 862a	3.8	2.1	1.6	1253	6.7	4.0	2.8
336e	4.5	2.1	1.3				
1561	3.8	2.2	1.7	Average	5.4	2.4	1.6
1632	5.6	2.2	1.8				
F-2, 840	3.5	2.25	1.5	Largest	8.3	3.4	2.7
F-2, 850	----------	2.3	1.9				
F-3, 888	7.0	2.3	1.8	Smallest	2.7	1.5	1.0
336d	5.6	2.3	1.9				

BLUESTONE SERIES

TABLE 7.—*Dimensions based on 56 specimens in the collection from Bluestone Series, with comparative data*

	Length	Width	Length of stem
	10.2	2.4	1.9
	8.5	2.3	1.6
	6.7	2.3	1.7
	6.6	2.8	2.1
	6.2	2.6	1.3
	6.1	2.7	1.5
	5.9	1.8	1.9
	5.5	2.1	1.5
	5.4	2.35	1.[illegible]
	5.3	2.5	1.5
	5.0	2.0	1.4
	4.8	1.8	1.8
	4.7	2.1	1.3 (basalt)
	4.6	1.85	1.4
	4.3	1.7	1.0
	3.8	2.1	1.5
		3.4	2.8
		2.2	1.8
		2.1	1.85
Longest	10.2	2.4	1.9
Widest	6.7	4.0	2.8
Shortest stem	3.8	1.8	.6
Mean	5.5	2.3	1.6
COMPARATIVE DATA FROM FOLSOM SITE NO. 1 (44MC72)			
	5.5	2.0	1.7
	8.2	1.9	1.8
	5.4	2.5	1.4
	7.3	2.2	1.8
BLUESTONE—FOLSOM COMPARATIVE DATA			
Longest in series	10.2	2.4	1.9
Shortest in series	2.7	1.5	1.0
Widest in series	6.7	4.0	2.8
Narrowest in series	2.7	1.5	1.0
Longest stem	6.7	4.0	2.8
Shortest stem	3.8	1.8	.6

These forms exhibit special variations of a more general culture that once extended all along the Eastern States and were adapted to the environment of the primeval forest of the American mesolithic or late paleolithic times. The cultures adapted to this environment must be of an early date and of a very specialized food supply.

It is impossible to make definite time separations as to form, since no large stratigraphic deposits of cultural material have been located during the time of exploration.

People of the Late Archaic and Transitional Periods made vessels or containers out of steatite and sandstone, deposits of which occur both in Mecklenburg and Brunswick Counties, Va. The Mecklenburg County deposit within the Roanoke River drainage is of a bluish gray color, while the Brunswick County deposit runs more to a pinkish hue. This color differentiation enabled the investigators to separate the various vessels made from these deposits.

Fragmentary steatite vessels were recovered from the surface, as well as from the cultural deposits of Hyco River site (44Ha6), Grassy Creek site (44Mc53), Howe site (44Mc66), Russell site (44Mc67), Hundley site (44Mc72), and site 44Mc75, which is outside of the reservoir proper but close enough to be affected by it. As a rule, the vessels are thick walled, flat bottomed, rounded or flat lipped, and the exteriors are left roughened, while the interiors are well smoothed. Handles occur in the form of knobs or lugs, rounded or roughly rectangular in outline, and are placed at or near the rim. Vessel form is either roughly circular or oval in shape.

CERAMICS

With the advent of pottery making, around 1000 B.C., at the close of the Archaic Period, there ensued a transitional period which terminated into what has been called the Early Woodland Culture Horizon. Pottery proved to be of the utmost importance. Of all the tangible residium in a site, pottery is of prime importance and is considered one of the most reliable of the diagnostics, since it reflects the subtle cultural changes that took place from time to time within the various primitive societies.

In a sense pottery has assumed a significance far out of all proportion to its place in the overall Indian cultural pattern, since it does not rightfully depict the true cultural importance that the aborigines attach to it, but because of its ability to endure for long periods of time, it affords the archeologist a very subtle yet serviceable tool.

The material from which the various vessels are made, the fact that they are physically altered by means of fire to guarantee their permanancy of form, and the brittleness of their nature—a liability to being broken—all are assets to a student of aboriginal cultures. As indicated by the numerous fragmentary clay vessels in their midden heaps and scattered throughout their living areas, clay vessels were constantly being broken, which necessitated continual replacement. The new vessels would, of necessity, reflect any cultural changes in methods of manufacture, form, and style of decoration or ornamentation. Such changes would not only indicate geographical limitations, cultural growth, progress in craftsmanship, development of the artistic temperaments, but would also indicate any degree of contact with, either directly or indirectly, any new ideas, arrival of new people into the area, as well as any trade relationships established between outside groups by subsequent migrations.

Since pottery remains are most numerous among the recovered artifacts, pottery is given careful treatment in this study.

HYCO RIVER COMPONENT
(44Ha7)

The village site and burial ground of the Hyco River site, 44Ha7, located at the confluence of the Hyco and Dan Rivers was the westernmost site to be excavated in the John H. Kerr Reservoir basin. It occupied an area roughly 350 feet long by 150 feet wide.

When first visited, the major portion of the site was under cultivation and fringed with trees and brush along the margin of the two streams. Before any excavation could be undertaken, the reservoir clearance crews had reached the site and proceeded to heap huge piles of brush and trees upon the central portion of the site, leaving only narrow marginal sections available for investigative purposes. The wheels of the heavy clearing machinery cut deeply into the site and well into the limits of the cultural remains, so that the first 10 to 12 inches had to be grouped into a single layer along with the plowed zone.

Starting at a distance 200 feet from the edge of the Dan River, a trench 10 feet wide was run north and south and at right angles to the bank for a distance of 150 feet, which carried the exploration well over the primary terrace and toward the river's edge. Later, this trench was enlarged in a westerly direction for another 60 feet, resulting in the exploration of an area roughly 70 feet wide by 150 feet long. The overall area was excavated to a depth of 4 feet, but to insure against the possibility of deeper cultural deposits this depth was extended, in a number of instances, down to water level, which measured slightly over 6 feet from the present ground level.

METHODOLOGY

The site was first staked off in 10-foot squares, allowing for complete control of the area. The soil was removed in arbitrary 6-inch levels except when features such as midden or burial pits occurred. Records of all features and artifacts were kept according to their provenience, square designation, and depth. All material from a single midden pit was kept as a unit unless natural stratigraphy was present and then the pit contents were reduced accordingly. Usually very little stratigraphy was found within the pits, so most of the material was recorded as a single unit. In a number of instances the contents of various midden pits were taken down in 3-inch levels or layers, in order that any undiscernible stratigraphy might be shown in laboratory study of the material that could not be detected while in the field.

All burials and features were listed numerically as found. Whenever human skeletal material warranted salvaging, the skull was placed in a single container, the long bones in another, and the rest of the skeleton was placed in a third; all were tagged with the necessary data attached to prevent any mixup.

Horizontal and vertical measurements relating to the excavation are given in feet and tenths of feet.

NATURE OF THE DEPOSITS

Usually when aboriginal man occupied an area he consciously or unconsciously deposited his cultural remains [10] over the extent of occupation. Burial, storage, and midden pits were inserted into the area as needed, and the virile surface contained either the discarded or lost artifacts that were trampled into the earth, together with any other material that represented indicators of his culture. The nature of the occupation determined the type of cultural deposits: in a village site the complexity of the assemblage is not only larger but more extensive, in campsites this becomes less, and in flint workshops or way stations occupancy is either sporadic or of such short duration that the deposits are thinner and less productive. Each type of site requires different methods of attack to recover, as completely as possible, the narrative contained within the deposits.

For the most part the cultural remains are confined to either the overall occupational layer or to the various pits. This material consists of fragmentary clay vessels, better known as potsherds; stone and bone tools; discarded animal bones, which were broken open so as to extract the marrow; bits of charcoal; wood ash; objects of shell, as well as the usual wastage from the manufacture of stone tools. This admixture together with the decayed vegetal substances and castoff fragments of animal matter all contributed to the complexity of the zone of occupation.

No definite cemetery area was found. The arrangement of the burials was very disorderly throughout the site, and they occurred in clusters scattered throughout the area at various levels. Head direction and grave types were variable. As a rule, there were no burial offerings, but if any were present they consisted mostly of the carapace of the box turtle, whose significance has been assumed to have been totemic rather than as a receptacle for food; of beads made from sections of shells; and maybe an occasional clay vessel. All graves were small in diameter, averaging 1.3 feet to 2.0 feet across at the mouth and varying somewhat as to depth. The shallowest was 0.5 of a foot beneath the plow zone, while the deepest was 3.2 feet, penetrating well into the sterile underlying sand.

Scattered throughout the sand-mixed village deposit were a number of river boulders and cobbles, none of which showed that they were ever put to use.

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[10] "Cultural remains" refers to any vestige of aboriginal activity wherein tangible evidence is present.

Bone material was rare. Whether the acidity of the soil was the main determining factor for this lack is to be questioned, since other sites within the immediate vicinity contained well-preserved bone scraps as well as bone tools. Whether the inhabitants of this particular site depended wholly upon vegetal material to sustain life, as it would appear, seems highly unlikely.

BURIALS

Directly beneath a rough pavement of broken stones, averaging 0.4 of a foot in thickness and 3.2 feet in diameter, was the badly disintegrated remains of a fully flexed mature adult lying on its right side. The skull, partially flattened from the weight of the soil and rocks, was exceedingly soft in texture. Most of the small bones had disappeared and only small portions of the long bones in articulate position were present, making placement positive. There were no grave goods present. In the immediate area of the bones were four Hyco Fabric-marked sherds as well as a number of crudely worked thin slabs of slate. The outline of the grave blended so perfectly with the surrounding pinkish-tinted sand that the point of origin and its dimensions could not be determined.

A second burial, located 4 feet to the north of the first, was found at the same depth. Both were badly decomposed and sex and age could not be determined from the remains. This burial was fully flexed, and the individual lay upon its left side. It was accompanied by a turtle carapace, whose crested dome rested uppermost, and was placed between the lower portion of the legs—between knees and ankles. There was nothing inside or beneath the carapace. It was definitely not a container, for the orifice was downward. Covering the upper part of the face and what remained of the skull was a large, Hyco Fabric-Marked sherd. The skull was secondarily reoriented with the adjustment of the surrounding soil. Only two burials were located at this site.

STONE ARTIFACTS

Fragments of various steatite vessels, together with a number of stemmed projectile points, were in the lowest levels of the site. Most of the points were made from a bluish-black chert and only a very few were made of quartz. Several of the chert points presented the various steps in their manufacture (pl. 38): first, a large flake was cast off from a primary core or parent stock; next, the flake was shaped by percussion chipping that was not too carefully done; then the sides were chipped and rarely was secondary chipping performed along the edges. None of these points are outstanding examples of workmanship. This same practice holds true for the quartz points.

Crude hammerstones have worked facets at one or both ends (pl. 51, *a–d*). Some are rounded, others are crudely disk shaped with shallow pits on one or both faces; the remainder are just crude waterworn hardheads picked up from the adjoining riverbed, used temporarily and soon discarded after they became too badly battered and fractured.

Fire-broken and/or cracked stones were often found scattered throughout the midden deposit. In a number of instances small heaps of these stones were found but none of them were in direct association with or in the immediate vicinity of fire-burned areas. Whether these can be designated as caches of fire-broken stones could not be determined.

Then, too, there was a crude pavement of broken and whole stones that rested directly above one of the burials. Whether this was constructed to keep dogs and other animals from molesting the grave could not be decided, for such a feature has not appeared regularly in this section of the State. It is inferred that this was its primary function, as it was much too small to indicate a living area.

CHIPPED STONE ARTIFACTS

Chipped stone artifacts were not plentiful (pl. 52). All are crudely manufactured and can be divided into three classes, depending upon their general outline: stemmed, ovate, and triangular. Of the stemmed type there are straight stemmed with slightly concave bases, and side notched with either rounded bases or slightly concave or straight bases. There are two general types of ovates: those with rounded bases, and those with slightly constricted and receding bases. The triangular forms are crude and mostly chipped upon one surface, leaving the other surface flat and untouched as far as chipping goes. All points are typical Woodland types.

Associated with the projectile points are a number of chert and slate spades, ovate in outline, fashioned by percussion flaking, and showing only the slightest amount of smoothing along the working edges, which was acquired through use.

There were several flat, unworked spauls of slate, of various sizes and shapes, found in all levels. These showed only the faintest trace of having been used, possibly as digging instruments.

POTTERY MAKING

With the introduction of the art of pottery making, around 1000 B.C., the Archaic was gradually brought to a close and archeologically the Early Woodland period had arrived. The stone and bone tools and other objects that had been manufactured during the Archaic and characterized that period were still manufactured, and the ensuing cultural period was enriched with this new art. This is truly a transitional period, one in which there was a gradual changeover from a nonpotterymaking seminomadic culture into one that made pottery and moved about less.

The earliest type pottery to be made in the basin area was manufactured by means of the coiling method. A very homogeneous clay, tempered with very fine particles of sand and characterized by being thin walled and conoidal based, was used. The shapes were confined mostly to jars having plain exteriors, evenly and intensively fired in an oxidizing atmosphere, which resulted in a light buff or a light brick-red color, and only rarely are fire clouds present.

Following closely upon this ware is a second having all of these same characteristics with the addition of one other, viz, the exterior was treated with either "cord-wrapped stick" or "fabric-marked" impressions. In reality, this is a form of textile-impression that has been termed "fabric-marked" in the present report.

Associated with these two wares is a third, which was impressed on the exterior with a wide-meshed knotted net. It was found primarily at the Hyco River site, 44Ha7, and only a comparatively few sherds were recovered. This fact would appear to indicate that this ware was either short lived or was one being introduced into the area from some outside source or sources.

All three of these wares have been assigned to the Early Woodland Horizon of the Hyco Series.

The Hyco Series was brought to a sudden and complete end during the early part of the Middle Woodland and a new type was introduced with the following characteristics: thin walled though much thicker than formerly, a homogeneous paste tempered with much larger particles of sand, evenly fired to black or the dark grays in color as a result of the reducing method of firing, and not as carefully finished. This forms the basic type of the Clarksville Series.

BINOMIAL SYSTEM OF TYPE NOMENCLATURE

All of the pottery types, as set up, are defined according to the Field Conference Procedures held in Birmingham, Ala., in 1938. Since the exterior surface treatments are more sensitive to cultural changes they have been taken as the diagnostic constant and called the descriptive term. This term, linked with some local name, constitutes our process of naming types, e.g., Hyco Cord-Marked, Hyco Cord-Wrapped Paddled, etc.

VESSEL SHAPES

The significant characteristic of the group is that only very simple shapes occurred, which are confined to the ubiquitous olla, a deep-bodied jar-bowl, and a small hemispherical bowl surmounted above a conoidal or subconoidal base. Molded dippers seemed to have appeared in the late phase of Early Woodland and continued somewhat into the Middle Woodland. Miniature dippers have been found in Late Woodland sites.

The ubiquitous Woodland olla with its conoidal or subconoidal base, gently swelling body, slightly constricted neck and vertical or moderately excurvate rim surmounted by a simple rounded or flat lip, which is either untreated or ticked with a number of parallel lines usually along the exterior margin, readily accounts for 60 percent of all the forms used through the basin. As a rule the rims are plain. Overall height varies from 30 cm. to 70 cm.

CLASSIFICATION OF POTTERY

An early attempt was made to sort out all the various types of tempering materials used that might give some indication as to relative age, for in the past it was determined that various types of aplastics corresponded to decided age differences; so a macroscopic examination was made of all the sherd material. Instead of a number of different forms, only a single aplastic, viz, sand, was found. These sand particles varied in diameter from very fine in the earliest of the wares, to medium fine and bordering on coarse in the later wares.

The writer later determined that there was a definite correlation between the texture of the paste and the type of aplastic utilized. The finer the aplastic the more homogeneous the paste, and the coarser the aplastic the more contorted the paste. The finer homogeneous paste was always correlated with a very thin orange to brick-red colored ware, while the contorted paste was always associated with the thicker, sandier, ware, which is black to gray to brown in color.

After these diagnostics were determined and tested repeatedly, my attention was diverted toward a study of the various exterior surface treatments. In the early wares, grouped into the Hyco Series, the exterior surface treatments were plain, fabric-marked, and net-impressed. In the later wares of the Clarksville Series were found not only the first two of the early series but several others which will be discussed under the Clarksville Series.

From our present study it was determined that Hyco Plain was the first ware to be manufactured at this site and it only persisted for a very short time before it was supplanted by Hyco Cord-Wrapped Paddle. The latter occurred on a similar paste and is only distinguished from the former in the application of a cord-wrapped hand or paddle treatment. Occasionally, this same surface treatment was applied not only to the exterior of the vessel but it was carried over onto the lip area as well, and sometimes a short distance into the throat area of the vessel. Whether these two treatments should be set up as two separate types, wherein one type has untreated lip and throat and the other confines the treated area only to the exterior of the vessel could not be decided, for it would seem to be drawing the distinctive qualifications much too finely, so both were grouped into a single category.

Hyco Cord-Wrapped gained favor very rapidly (66.7 percent) and edged out the earlier Hyco Plain (33.3 percent), which soon disappeared altogether. Before the complete disappearance of Hyco Plain, a third ware made its appearance, Hyco Fabric-Marked. This ware had a mushroom growth and gained popularity very rapidly. Vessel form, a type of paste, firing methods, and colors remained stable all during this phase of growth (fig. 21).

Fabric-marking continued very strong all through the Early Woodland, and this concept was carried over into Middle Woodland times, becoming of minor importance during the early phases of the Late Woodland.

The technological tradition of the fabric-marking, in the pottery continuum, had the tendency to occupy not only a great deal of space but proved to be rather persistent, in that traces continued into the latest period of occupancy but on an entirely different type of paste. It served, somewhat, as a time marker during the Early or Transi-

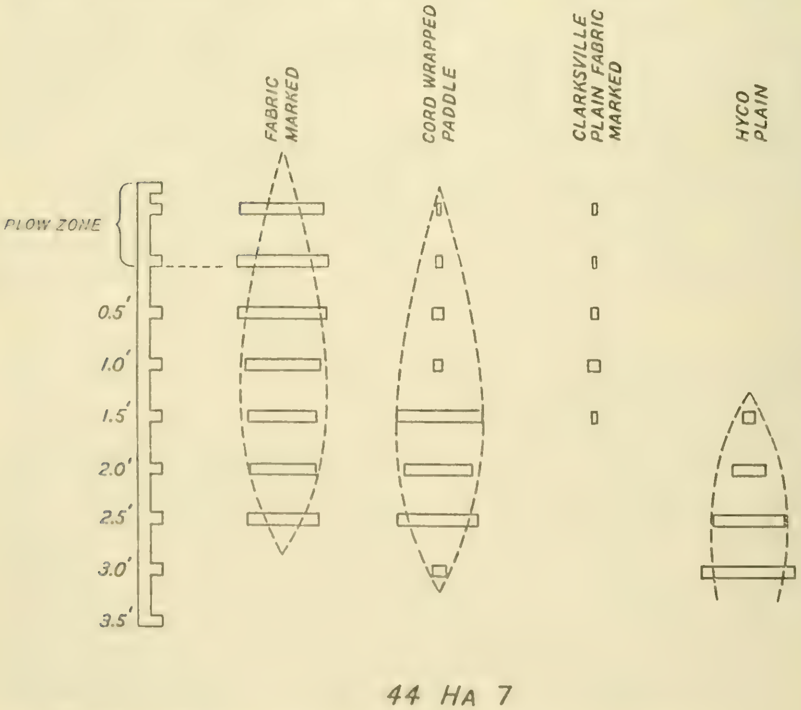


Figure 21.—Seriation graph of ceramic types recovered from site 44Ha7.

tional Woodland period and was coeval with certain cord-wrapped paddle, plain, and a simple-stamped ware along the Hyco River drainage. All were probably dependent upon certain determining environmental factors. This could best be explained by pointing to the use of this general cotradition of surface treatments extending from southeastern Canada on the north, to Indiana on the west, to Mississippi on the southwest, and to central Georgia on the south—an area over which most early cultures made use of this same technological tradition as far as exterior surface treatments are concerned and differed only as to the basic vessel form.

It has been accepted that conoidal bases are early and that these were followed by rounded and slightly flattened bases at a much later time, being influenced by intrusions from Middle Mississippian cultures, especially to the south but never quite reaching northward into northeastern North Carolina and southern Virginia.

As pointed out earlier, the tempering factor remained constant throughout the reservoir area, but the amount and the size of the particles increased during the Middle and Late Woodland times, when it constituted from 15 to 35 percent of the volume of the paste. Hardness ranged from 2.5 to 3.5 in the Moh hardness scale. Fabric elements became somewhat cruder and the coiling techniques of manufacture continued, modified somewhat by the different firing methods that were standardized for each horizon.

HYCO PLAIN

PASTE:

Method of manufacture: Coiled or built up with annular rings, as shown by coil-line breaks.

Temper: Fine river sand.

Texture: Ranges from medium fine to medium, giving a fine-grained paste which is quite compact.

Color: The paste and surface color ranges from an orange red, tan, and buff. No evidence of any smudging.

SURFACE FINISH:

Modification: By definition both surfaces are smoothed and left untreated as plain. Surfaces are slightly uneven in thickness over the entire vessel.

FORM:

From the small number of sherds, the vessel forms appear to be medium-sized ollas and wide-mouthed deep bowls, both with conoidal bases.

Rim: These are usually of the rounded, flattened, or slightly tapered type but rarely is the rim so flattened that a portion extends beyond the exterior wall limits.

Thickness: Average is 5 mm., with the range from 3 to 7 mm.

PROBABLE RELATIONSHIP OF TYPE: This is the earliest pottery in the Roanoke River system and is found in direct association with sherds from steatite vessels. In physical appearance the paste resembles that of the Deptford of Georgia but is not generically related. Both forms are attributed to the Late Archaic and Early Woodland, a sort of Transitional Period.

HYCO FABRIC-MARKED

(Pls. 53 and 54)

PASTE:

Method of manufacture *Temper* *Texture* *Hardness* *Color*	Same as for Hyco Cord-Wrapped Paddle

SURFACE TREATMENT:

Modifications: Smoothed before impressed with larged warp fabrics formerly known as "cord-wrapped stick" or "cord-wrapped dowel." Interiors were either smoothed with only an occasional sand particle showing, which gave a raspy feel, or they were treated with a comblike object, which developed a series of parallel ridges over the entire interior surface. There was some variation from vessel to vessel.

Decoration:

Technique: Fabric impressions of a close weft and wide warp covering the entire exterior surface from lip to base.

Design: Design consists of a number of shallow, longitudinal, parallel grooves that run diagonal to the lip and slope downward to the base of the vessel.

Distribution: Impressions cover the entire exterior of the vessel, sometimes carrying over onto the lip but rarely into the upper portion of the throat. If the latter occurs the impression is spotty.

FORM:

Rims: Vertical or slightly flaring.

Lips: Either rounded, flat, slightly tapered, or slightly folded.

Body:

Ollas: Rounded or elliptical with slight shoulders and gently constricted neck.

Bowls: Tall, wide-mouthed with vertical sides sloping to a conoidal base.

Base: Conoidal.

Shape: The shape of the typical olla is a moderately open-mouthed vessel, with a conoidal or subconoidal base, a shoulder that curves slightly inward from a rounded or elliptical body, and a more or less vertical to slightly flaring rim surmounted by lips that are about evenly divided into three main groups: rounded, flattened and rounded, and narrowed and rounded.

The typical bowl of this ware is tall for this type of vessel, wide-mouthed, with vertical sides that slope downward terminating in a conoidal or subconoidal base.

HYCO CORD-WRAPPED PADDLE

PASTE:

Method of manufacture: Coiling, distinct fracture planes to be noted. In some specimens the "welding" of coil joints was not always obliterated and hence the width of the coils could be determined with regard to range, which varied from 5 to 10 mm.

Temper: Very fine to medium fine sand. Occasionally a larger particle is noted, but this is rare.

Texture: Fine, compact.

PASTE—Continued

Hardness: 3.0 to 3.5 on the Moh scale.

Color: Oxidizing atmosphere in which colors ranged from an orange red, tan, or buff. Fire clouds absent suggesting that some sort of a crude kiln or well-controlled firing with vessels upright was carried on. Practically no variation from piece to piece in color but a shading from one color into the other.

SURFACE FINISH:

Modifications: Exteriors: Treated with cord-wrapped paddle, which was applied carefully but firmly with practically no overlap in the impression. Treatment covers the entire exterior with only an occasional vessel having the lip area treated similarly. Rarely is the upper part of the throat area treated, if so, it only occurs in spots. Interiors are mostly smoothed, some more carefully than others, and the fine sand gives it a slight sandy feel.

Decoration: Cord elements ranging in diameter from 1.5 to 3 mm. All have a clockwise twist.

Design: Cord elements were applied in no one special direction but were so applied that the elements either slanted to the left or to the right of the lip or were parallel to the lip.

Distribution: Complete exterior, rarely extended to the lip or over this area, and extremely rare in the throat area.

FORM:

Rim: Vertical or slightly flaring. Rarely false rim strip present.

Lip: Rounded, squared, or flat, rarely slightly tapered.

Body:

Ollas: Slight shoulders slightly constricted neck upon an elliptical or rounded body.

Bowls: Wide-mouthed with vertical sides sloping to conoidal base.

Base: Conoidal.

Shape: Small to medium, with rounded to globular body surmounted by a slightly constricted neck, above which is a slight to moderately outward slanting neck terminating with either a rounded, flat, or slightly tapering lip around a wide mouth.

HYCO COARSE NET-IMPRESSED

PASTE:

Method of manufacture
Temper
Texture
Hardness
Color
} Resembles Hyco Plain.

SURFACE FINISH:

Modification: See Hyco Plain.

Decoration:

Techniques: Exterior was treated with a double thickness of medium coarse net whose elements were 15 mm. along the side of fine cord impressions 1 mm. or less in diameter formed by knots which were larger in diameter than the cord elements and were pressed deeper into the clay.

Design: Double squares which almost coincided.

Distribution: Impressions covered the entire exterior walls of the vessel.

Form: From the small number of sherds recovered of this type treatment, it appears to be confined to the exteriors of medium-sized ollas of the typical Early Woodland shape.

Lips: Either simple rounded, slightly flattened, or slightly tapered.

Rims: Either vertical or gently outsloping.

Body: Elliptical or rounded.

Base: Conoidal.

Probable relationship of type: This type is among the earliest of the various wares in the Roanoke River system and is found in association with Hyco Plain and Hyco Cord-Wrapped Paddle. All types have a common physical appearance. Aerial distribution of the type is small, since it is not found in the upper reaches of the Roanoke Valley but seems to be more prevalent on the Dan River and its tributaries. Whether this type occurs on the New River in western Virginia is unknown to the writer.

HYCO SIMPLE-STAMPED

Paste:

Method of manufacture	Same as Hyco Cord-Wrapped Paddle
Temper	
Texture	
Hardness	
Color	

Surface finish:

Modifications:

Exteriors: Exteriors were carefully smoothed before application of finishing touches.

Interiors: Interiors were either carefully smoothed or treated with a comblike object, which gave the inside surface a ridged effect.

Decoration:

Technique: Exterior was malleated with a thong- or root-wrapped paddle.

Design: Design consists of a number of shallow, wide, flat grooves which were either parallel to each other, transverse to each other, or diagonal to each other, and represented a negative of the wrapped paddle.

Distribution: Impressions extended over entire exterior surface of the vessel. Lips were untreated.

Form:

Rims: Same as for Hyco Fabric-marked.

Lips: Same as for Hyco Fabric-marked.

Body: Same as for Hyco Fabric-marked.

Shapes: Same as for Hyco Fabric-marked.

Probable relationship of type: It is very close in resemblance to the Deptford Simple Stamped both in appearance and in the time element. This ware is scarce.

HYCO COMBED

Paste:

Method of manufacture	Same as Hyco Cord-Wrapped Paddle
Temper	
Texture	
Hardness	
Color	

SURFACE FINISH:

Modifications:

Exteriors: Same as Hyco Simple Stamped.

Decoration: Entire exterior surface was treated with a comblike tool with dull pointed teeth regularly spaced, imparting a series of parallel grooves that varied from faint impressions to those with a depth of around 2 mm.

Design: No attempt was made at designing. Strokes varied in all directions as though the person only attempted to score the exterior surface of the vessel.

Distribution: Mostly confined to the exteriors but in a number of vessels the interiors were also treated in similar fashion.

FORM:

Rims: Same as Hyco Cord-Wrapped Paddle.

Lips: Same as Hyco Cord-Wrapped Paddle.

Body: Mostly ollas but some bowls; all resembling those of Hyco Cord-Wrapped Paddle.

Shapes: Same as Hyco Cord-Wrapped Paddle.

Hyco Fabric-Marked resembles *Baumer* with the exception that in the former the bases tend to run more to conoidal rather than to the flat base of the type. Exterior surface treatment has been brought about by impressing a plain plaited fabric or textile upon it. This ware is probably one of the first types of pottery made by peoples of the Transitional Archaic–Early Woodland times.

It is not only the major ware but it accounts for the greatest percentage of sherds in the collection from this site. In earlier literature this ware has been called "cord-wrapped-dowel," "cord-wrapped stick," as well as "fabric-marked." The latter is more definitive and truly characterizes the type of impression.

The twined fabrics which were used display various degrees of fineness in that the woof elements range from a fairly coarse thread or string to one approximating the thickness of a fine cotton string of the present day, while the weft elements are nearly always rather thick or coarse. In some specimens the woof elements are very close together, while in others they are loosely applied.

The term "cord-wrapped-paddle" refers to a surface treated by means of a paddle or hand wrapped with a series of cords, either closely or widely spaced, creating either a regular patterning or one in which there is no overlapping; or a poorly defined, haphazard pattern as the result of careless winding, and the repeated application resulting in partial obliteration of the elements.

Ritchie and MacNeish's (1949, p. 100) description of their Vinette I pottery type in the early Point Peninsula Series approximates the main early pottery type in the Hyco Series of the Buggs Island area. Tempering is identical; so are textures and colors. The exterior fabric-impressed surface treatment, as described, is just one facet in the whole gamut of fabric-impressing. The interior surface, besides being fabric impressed, may be smoothed and later treated with some blunt-toothed tool which leaves the surface scored by a number of shallow, squared to bluntly rounded grooves usually running in a general horizontal direction. Whether this internal grooving served some functional purpose cannot be determined. Lips are often ticked by impressing either with a cord or with a bluntly pointed instrument at a diagonal or straight across.

In both these wares the outer and inner lip margins, as well as the upper portions of the throat, are treated with what appears to be a form of fabric-marking or a cord-wrapped-stick or dowel. Sometimes this treatment is carried over onto the rim from the throat area, a method that is not consistent. Such treatment is not thought to be diagnostic enough, at the present time, to warrant setting this up as a distinct pottery type.

Simple stamped, as the term implies, indicates that the ware was malleated with either a thong, a sinew, or a root-wrapped paddle, leaving behind smooth impressions in counterdistinction to cord-wrapped or prepared paddles wherein the design was carved upon the surface of the malleating tool. Similar treatment has been recorded for Mossy Oak Simple Stamped and Deptford Simple Stamped.

The term "plain" means that the surface received no additional treatment after the vessel was completed, at which time all junctures of coils were completely sealed, tool marks obliterated, and the whole smoothed by the potter.

The term "coarse net impressed" comes from the fact that a wide-meshed net, as distinguished from a later fine-meshed net, was very carefully impressed on the exteriors of vessels. In some cases only one thickness of the net was applied, while in other instances a double thickness was used. In no case was any attempt made to obliterate the impressions.

At times the interior surfaces, and to a lesser degree some exterior surfaces, were scored, scratched, or combed, resulting in a series of shallow, parallel, rounded-bottomed grooves as though a toothed or serrated object was drawn across the surface to create such impressions. Grooves of this type are not the result of "brushing," as they are much too evenly spaced. All grooves are of equal depth, width, and smoothness, which would not have resulted if the surfaces were brushed with bundles of grass stems or small twigs. In applying the comblike tool, it had to be scraped across the surface with an even pressure, and broad, even strokes. The direction of these strokes varied from horizontal to slightly diagonal.

This technique was applied to plain smoothed surfaces, as well as to those previously treated with fabric-marking. In the latter case it occurs not evenly but spotted. When used with fabric-marking, the islands of combing obliterated the fabric-marking entirely and only the combing shows.

The wares mentioned above resemble the Deptford Series of Georgia in paste, color, exterior surface treatments, thickness, and hardness of vessel wall, and, like the Deptford series, occur as the earliest of wares in the John H. Kerr Reservoir basin.

Lips.—In a number of instances lips received the same impressions as those applied to the exterior surfaces. Lip forms as a rule are either simple, rounded, flattened and rounded, or slightly folded and rounded. Notched rims are rare and usually occur on heavily corded fabric-marked.

Interior surfaces are either carefully smoothed, partially smoothed, or combed. In a number of instances the fabric used to impress the exterior was folded over and imprinted not only on the lip but within the throat of the vessel as well. In plates 53 and 54 the exterior and interior surfaces are shown illustrating this point.

No appendages of any type are present on the exterior of vessels.

Either the coiling or fillet technique of manufacture is indicated. Ring obliteration, while not always complete, clearly shows up occasionally on the exterior surfaces of various sherds (pl. 53).

Vessel forms are either wide-mouthed ollas or deep bowls with vertical sides. Both forms have conoidal bases. The ollas are deep, with more or less elliptical shaped bodies, and terminate with decided conoidal bases.

Tables 8 and 9 indicate both the numerical and percental count of the various wares recovered from the Hyco River site (44Ha7). Table 8 indicates only the types and number of sherds found in the main body of the site exclusive of those gathered from the surface and the plowed zone. Table 9 gives the complete numerical and percental count of all types recovered.

TABLE 8.—*Sherd count and percentages from the main digging, exclusive of material from the surface and from the plow zone*

Surface finish	Number	Percent
Fabric marked	1,414	75.0
Cord-wrapped paddle	316	16.8
Plain	129	6.8
Coarse net impressed	14	.7
Combed	13	.7
Total	1,886	100.0

TABLE 9.—*Complete numerical and percental count of all types recovered*

Surface finish	Number	Percent	Surface finish	Number	Percent
Fabric marked	1,414	73.1	Combed	13	0.7
Cord-wrapped paddle	316	16.3	Fine net impressed	4	.2
Plain	129	6.7			
Textile impressed	44	2.3	Total	1,934	100.0
Coarse net impressed	14	.7			

In plotting the percental values of the wares present in the various stratitests (from 1 through 4) the following results were obtained:

Hyco Plain easily demonstrates its early appearance in the strength manifested, while cord-wrapped paddle is just getting started. Hyco Plain soon dies out completely, leaving the fabric-marked as the favorite ware which continues on as long as the site is occupied, while the cord-wrapped paddled ware quickly gains its maximum and soon fades away. Fabric-marked, the third ware to make its appearance, quickly takes over and gains in dominance over all other types.

Surface indications reveal that both the Clarksville Plain and the Textile Impressed are minority types, which were not really represented in the site proper, since none were found within the cultural deposits. This is best demonstrated in the final plot of the whole site which follows.

TRAIT LIST

The following list of traits has been compiled from the excavation of the Hyco site, 44Ha7. An attempt has been made to arrange these traits in a certain fuctional order. (After Fairbanks, 1942.)

SUBSISTENCE ACTIVITY:

Collecting complex:

Collecting wild nuts, berries, grass seeds, and root stock. The latter is inferential since a number of digging tools were found but no evidence of any practice of agriculture was found.

Hunting and fishing complex:

Bear, deer, raccoon, rabbit, turkey, opossum, waterfowl, etc.

Garfish, etc.

Use of nets, inferential from the imprints on exterior of clay vessels.

COMMUNITY PLAN ACTIVITY:

Village location and plan complex:

Village located near stream.

Village located at the confluence of two rivers.

Village located near shoal where shellfish are available.

Midden stratified.

Midden pits, scarce.

Fired areas with broken stones.

Fire-cracked stones in debris.

Architectural complex:

No evidence of any structures.

CEREMONIAL ACTIVITY:
- *Burial complex:*
  - Oval graves
  - Flesh burials
  - Single burials
  - Flexed burials on side
  - Burial marker, in form of rough stone pavement
  - Burial offering in form of sherds
  - Burial offering in form of turtle carapace
  - Grave goods absent
  - Totemic indication with turtle carapace

TECHNOLOGICAL AND ARTISTIC ACTIVITY:
- *Pottery complex:*
  - Coiling used as the process of manufacture
  - Pottery in upper levels
  - Pottery, tempered with fine particles of sand
  - Rims and lips are simple and uncomplicated
  - Form—conoidal based
  - Cord-wrapped hand impressed
  - Fabric-marked
  - Plain
  - Combed
  - Textile-impressed
  - Net-impressed
  - Olla forms
  - Bowl forms
- *Rough stone complex:*
  - Hammerstones, natural hardheads
  - Hammerstones, spherical
  - Hammerstones, rough discoidals
  - Slabs of slate used as hoes or digging tools
- *Chipped stone complex:*
  - Projectile points, stemmed, chert
  - Projectile points, lanceolate, chert
  - Projectile points, triangular, chert
  - Projectile points, stemmed, quartz
  - Projectile points, triangular, quartz
  - Projectile points, lanceolate, quartz
  - Knives, chert
  - Scrapers, chert, flint
- *Steatite complex:*
  - Bowls, deep, spherical
  - Bowls, deep, oval
  - Fragmentary sections scraped for face talc
- *Bone complex:*
  - Awls, splinter
  - Turtle carapace, totemic
- *Fiber complex:*
  - Cord, clockwise twist
  - Fabric, inferential from surface of pottery

PERIODS	POTTERY TYPES		
MIDDLE WOODLAND (EARLY)	*Clarksville Plain*	*Cord-wrapped Paddle*	*Fabric-Marked*
TRANSITIONAL WOODLAND	*Hyco Plain*	*Cord-wrapped Paddle*	
ARCHAIC	*Steatite vessels* *(Stone and bone tools)*		

Chart 1.—Evolution of the main pottery types at the Hyco River site, 44Ha7.

CLARKSVILLE COMPONENT
(44Mc14)

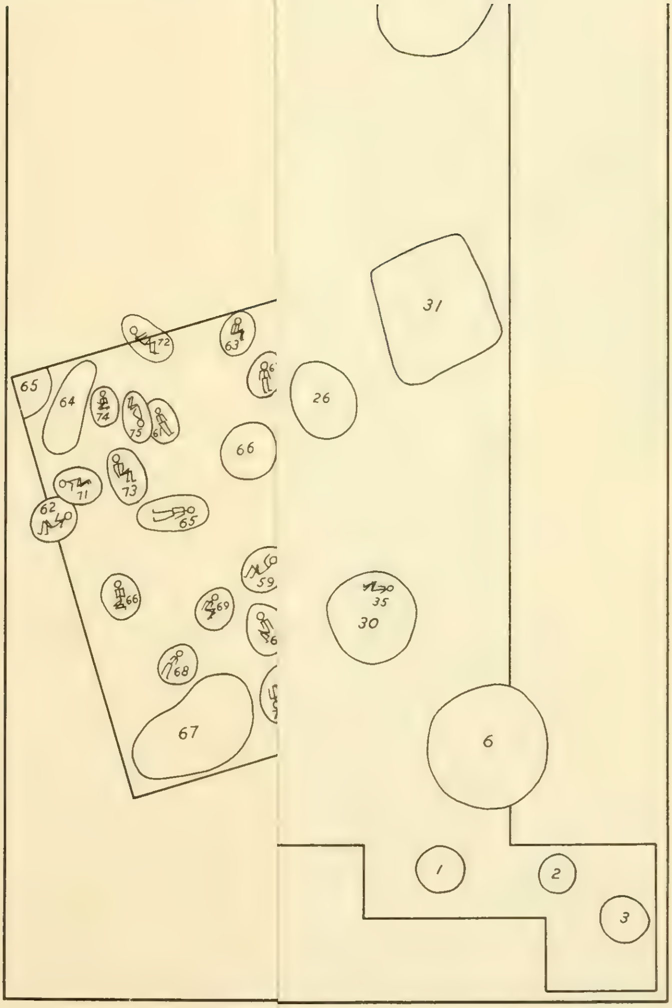
The first site in the John H. Kerr Reservoir area to receive field attention was the Clarksville site (44Mc14). A case of then or never, it was being rapidly destroyed by construction work on the railroad trellis and bed. A new railroad right-of-way and a cement trestle were being constructed across the Roanoke River leading into Clarksville. Work was well underway and the major part of the site was badly damaged before word was received about this condition. At this time a great deal of the topsoil, together with the underlying deposits, was being carted off as dressing for a local golf course.

Of the original 5 acres covered by the site only two small undisturbed areas remained free of encumbrances (pl. 80; fig. 22). One measured 110 feet long by 60 feet wide, the other about 30 by 30 feet square. These areas were laid out in 10-foot squares. Work was started at the southern end of the large rectangle because it was farthest from the engineering activities then going on in the construction area. This allowed greater leeway in maneuvering and deploying the men within the various 10-foot squares as the group proceeded northward along the long axis of the area.

The site was reduced by means of arbitrary 6-inch levels taken off horizontally. The soil was generally sandy, requiring the use of only the shovel, trowel, and whiskbroom as tools.

Numerous midden pits, stone-lined wells, hearth areas, heaps of fire-cracked and/or broken stones, shell-filled pits, and burials were located. Potsherds were scattered thinly over the area but were concentrated mostly within the various midden pits.

Midden pits were usually circular in outline across the mouth; sides were mostly parallel with either a flat roundish or excurvate base. These pits ranged in size and depth from small to fairly large. The smaller ones measured 1.0 to 1.4 feet across the mouth and from 0.8 to 2.6 feet in depth. The larger ones varied from 3.8 to 5.9 feet in diameter across the mouth and from 3.1 to 6.9 feet in depth.



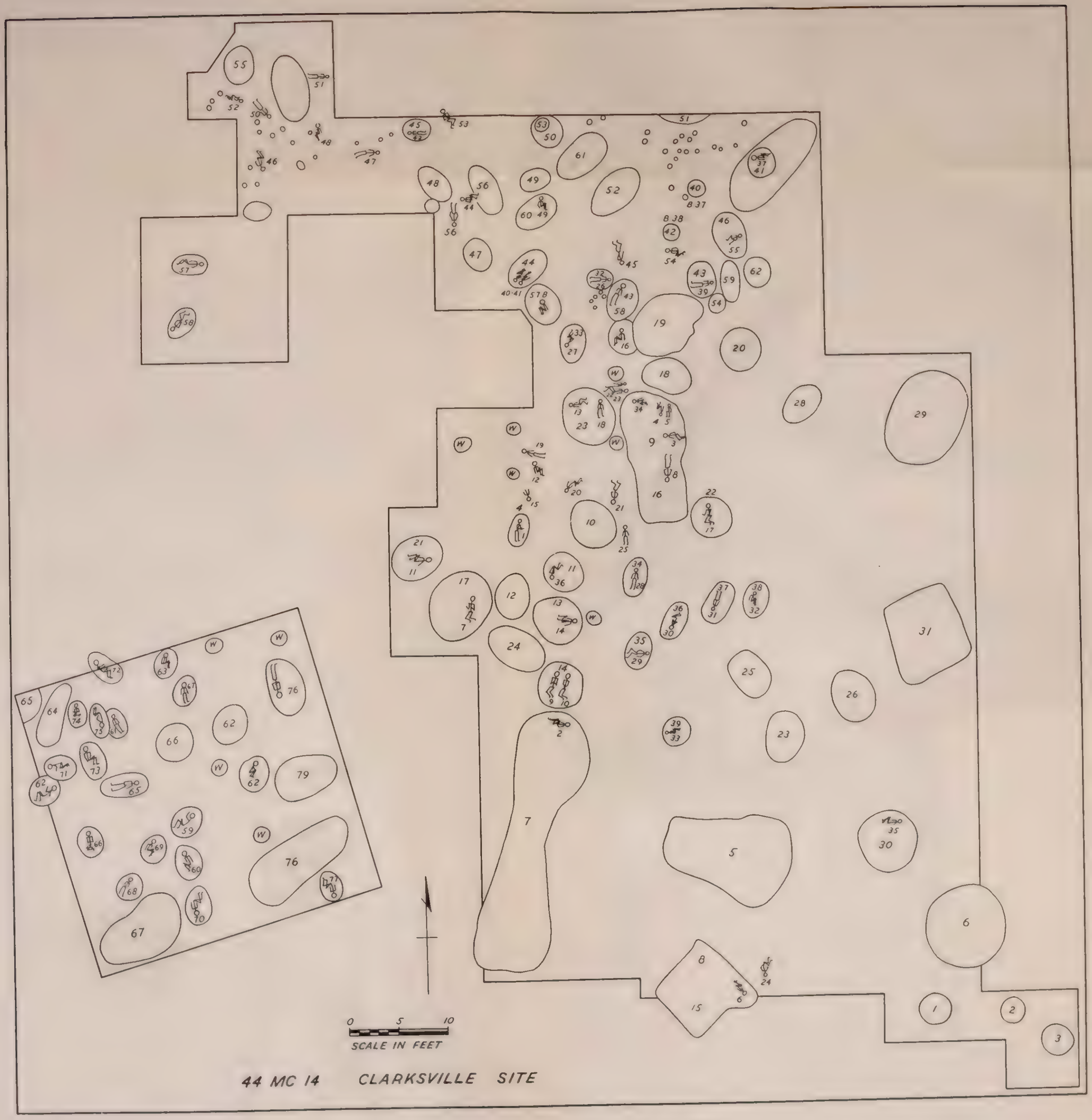

0 5 10
SCALE IN FEET
44 MC 14 CLARKSVILLE SITE

FIGURE 22.—Excavated area in the Clarksville site, 44Mc14.

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A number of these pits were filled so solidly with tightly packed shells of *Unio* that there was practically no soil at all within the pit (pl. 81). A lack of evidence that any heat had been used in these pits excludes them from being called barbecue pits, roasting pits, etc. In the bottoms of a few of the smaller ones was found a deep whitish ash layer, but the surrounding soil showed that there had not been sufficient heat in the ash to bring about a color change in the sandy soil walls.

Other pits were filled with the usual midden remains: potsherds, a few projectile points, a bone tool or two, periwinkle shells, ash, bits of charcoal, and soil filled with a heavy deposit of humus.

Features called "stone-lined wells" consisted of very large oblong sections of stones thrust upright to form openings averaging 1.3 to 2.0 feet in diameter and extending downward to the water table, slightly over 7.1 feet deep. Six or seven of these stones formed a group. The writer's explanation of such features is that the inhabitants used these well-like holes to draw off clear water rather than to dip it out of the bordering river. These features are unique in the archeological picture of this region and the Southeast.

Hearth areas, or fire-burned areas, occurred at various depths throughout the site. These were roughly circular in outline and ranged in diameter from 1.7 feet to 6.7 feet. In some the reddish soil was fairly thin; in others this coloration change measured around 0.5 of a foot in thickness and tapered off around the edges. Some were flat across the face while others had slight central depressions that contained a bed of whitish ash as well as bits of charcoal. Upon some of these beds were found a number of river cobbles that were either whole, fire-cracked, or fire-broken, but stones of this nature were not confined to fire-burned areas: several small piles were located scattered throughout the site.

In all of the digging, sherds were the most numerous of the cultural remains, not that they were relatively numerous during the life of the site: the more perishable products were soon reduced to dust, leaving behind only the most durable of artifacts and other remains.

METHODOLOGY OF THE STUDY OF CERAMIC REMAINS

After the basic laboratory work had been accomplished, the sherd material was prepared for study purposes. Uppermost in this study are two basic interests in sherd material: (1) as concrete expressions of ideas and behaviors of a people or peoples who made these vessels, demonstrated both in the forms for specific usage and by the individualistic differences of the creators of these objects, and (2) as determinants of time and space relationships within a small area as compared with regional differences. Taylor (1948, p. 115) claims that the first belongs to a cultural category as distinguished from the empirical category of the second. In the former—

> . . . more interpretation is called for, not less! Therefore, it behooves the archeologist not to maintain the untenable position of "sticking to the facts" meaning the renunciation of inference, hypothesis, and testing. It is incumbent upon him to derive his observational data as objectively as possible, to differentiate between the observed fact and derived inference, to make explicitly labeled interpretations of as detailed and full a nature as possible and then to look, either in the ground or among the data at hand, for evidence by which his hypothesis may be tested.

This has been ably illustrated by Phillips, Ford, and Griffin (1951, pp. 61–62) in their typological studies. They stated that once "names" get into print they no longer serve as "tools" but to all practical sense and purpose they lose their value. Krieger (1944), Rouse (1939), Kluckholm (1939), and others have written on the concept of typology, but "the underlying concepts and assumptions of this classification system, as applied to the Southeast, have not been explicity stated, although the methodology has been described by Krieger."

Whether single or multiple factors were entailed as the concept of pottery making was added to an epineolithic base, as first introduced into the Southeast or the Middle Atlantic province, is irrelevant at this point. Once the idea took hold, the techniques of manufacture, shaping, treating the various surfaces, and decoration gradually underwent certain changes during time and space as new concepts and contacts were introduced from outside the area. These brought about certain stylistic changes or types, which deviated but little from the ethnographic cultural norm of the particular time and place; thus what is known as a "pottery complex" was established within its continuum. This cultural norm was never static but underwent certain gradual changes, mainly in exterior surface treatment.

CLARKSVILLE SERIES

The Clarksville Series constitutes a definite ceramic continuum. Manufactured either by the coil or annual ring methods, the paste consists of moderately sized sand particles as tempering, resulting in a somewhat contorted paste. The ware was fired in an oxido–reducing atmosphere which, because poorly controlled, resulted either in a gray, brown, or black color or in a combination of these colors with some smudging from fire-clouds. Its distinctive vessel form and rims (fig. 23) are regularly assigned to the Middle and Late Woodland cultures. These date somewhere between A.D. 500 and 1450.

The various surface treatments employed during this period resemble, in a general way, the Dan River Series of Coe (Ms. 1953, pl.

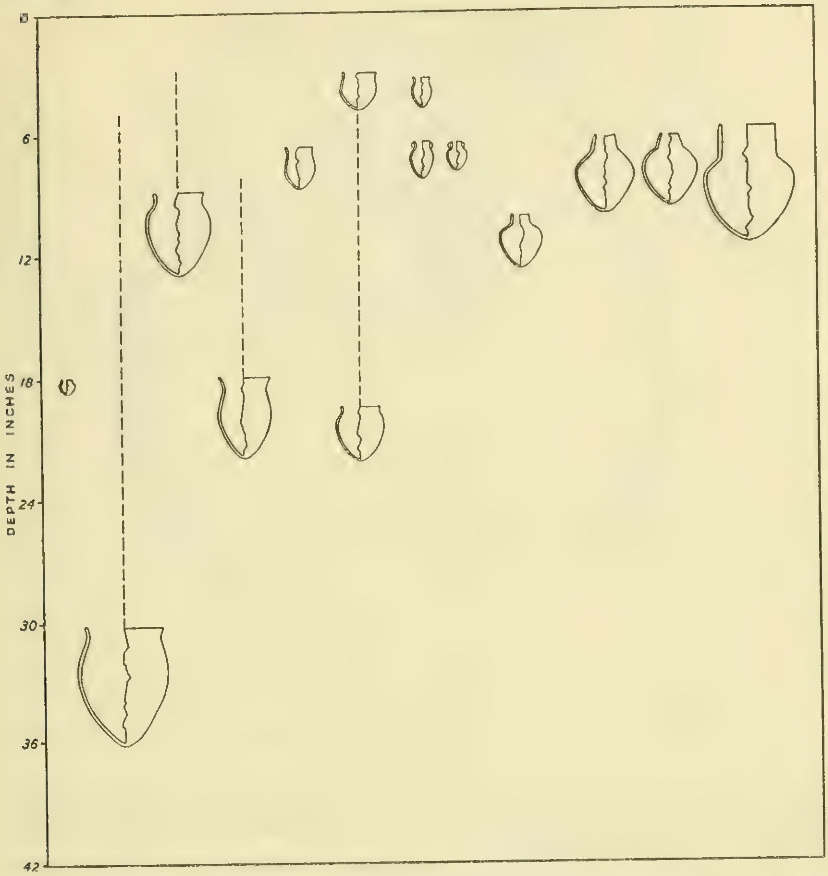

FIGURE 23.—Jar-shape sequence found in the Clarksville site, 44Mc14.

55). The main difference is in the temper. The Dan River Series is predominantly a crushed-quartz-tempered ware blending into a sand-tempered ware, while the Clarksville Series is unitempered, i.e., sand-tempered. No type of crushed stone was used as an aplastic within the reservoir area. This trend reflects a northeasterly influence coming in through central and northern Virginia from Maryland and Pennsylvania and a connection with various Algonquian types indicated by Parker (1920) and Holmes (1885; 1903).

From the Early Woodland olla (pl. 56, *b;* fig. 24) evolved a vessel retaining the characteristic conoidal base but modified by the introduction of a pronounced shoulder surmounted by a vertical or slightly constricted neck (fig. 25). Necks in some instances were elongated. Lip configuration remained unchanged; paste characteristics were stabilized.

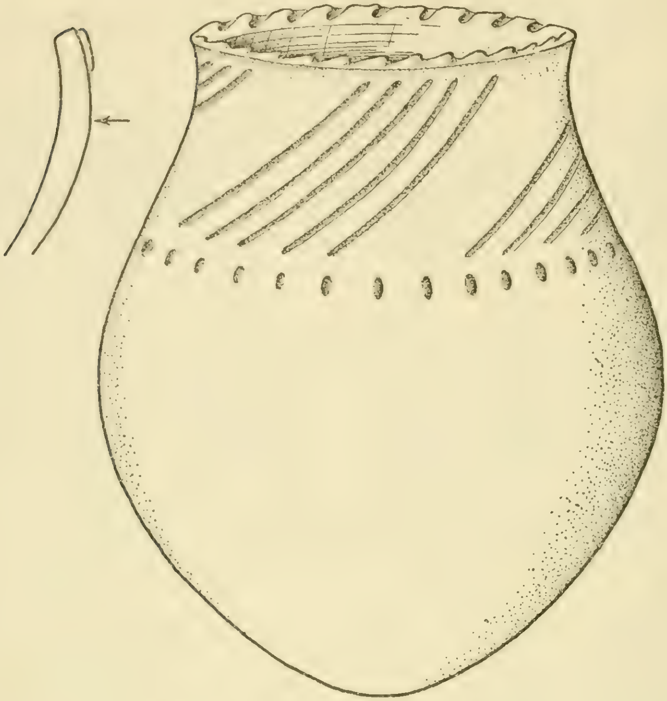

Figure 24.—Early Woodland jar shape.

Decoration, when present, consists of a series of short, parallel, incised lines or pinched nodes at the base of the neck on the larger ollas (pl. 43). On miniature ollas this consists of zones of punctations with or without delimiting lines incised or traced around the neck sections.

Bowls.—Bowls are of two general shapes: either modified hemispherical or carinated (pls. 57, 58). Both have direct rims, slightly flaring sides, and terminate in a subconoidal or rounded base. A number of aberrant forms are present, represented by single specimens. The first is a flat-based bowl (pl. 45), similar to those having slightly excurvate flaring sides terminating in a rounded lip, reported from Raccoon Point site in New Jersey (communications with Mr. L. T. Alexander, 1955), as the earliest type appearing at the end of the Archaic and the beginning of Woodland during the Transitional period. Another form is a globular-shaped bowl whose rim curves sharply inward to form a slightly constricted oriface terminating with a rounded lip. Both forms were initially fabric-marked, but parts of the pattern were subsequently obliterated. Then, there are two instances of a small, deep, wide-mouthed bowl having vertical pierced lugs for handles at opposite sides. These are reminiscent of those found at the Baum Component of Fort Ancient (Griffin, 1943, pl. 1; my pl. 59) and the Feurt site (Mills, 1917, p. 363), as well as the

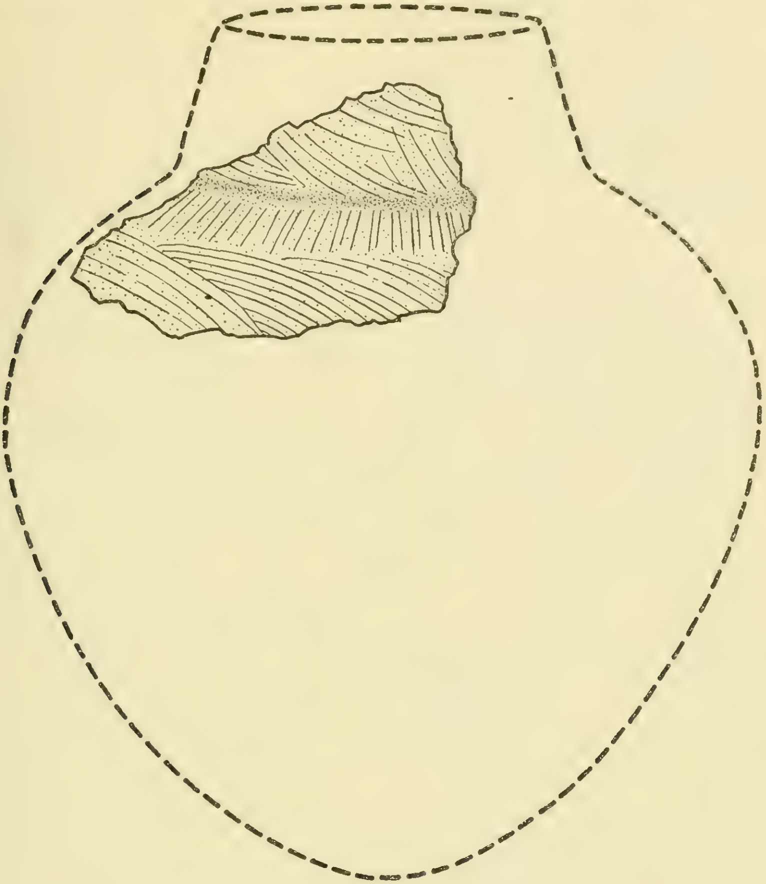

Figure 25.—Typical Clarksville series jar shape.

Johnston site (Dragoo, 1955). The latter form occurs late in the occupancy of the Clarksville site (fig. 26).

Dippers.—Miniature molded dippers (pl. 58, *a–d*; fig. 27) first occurred during the Middle Woodland times and were soon followed by those of full scale. In every instance the dipper was molded rather than built up by means of the coil or annular ring system. Handles are not only solid but are crudely fashioned. The bowls in all instances are round, rather shallow, and have fairly thick walls. A number of these dipper handles are illustrated in plate 59, *e–i*.

Miniatures.—Miniature vessels (pl. 58, *e–g;* fig. 27) were made by molding or by the coil method. The smaller, cruder vessels were usually molded, while the larger specimens were more carefully fashioned by means of the coil method. Thus the molded specimens are characterized by thicker and uneven walls while those built up by the coil method are distinguished by thinner walls and a more symmetrical

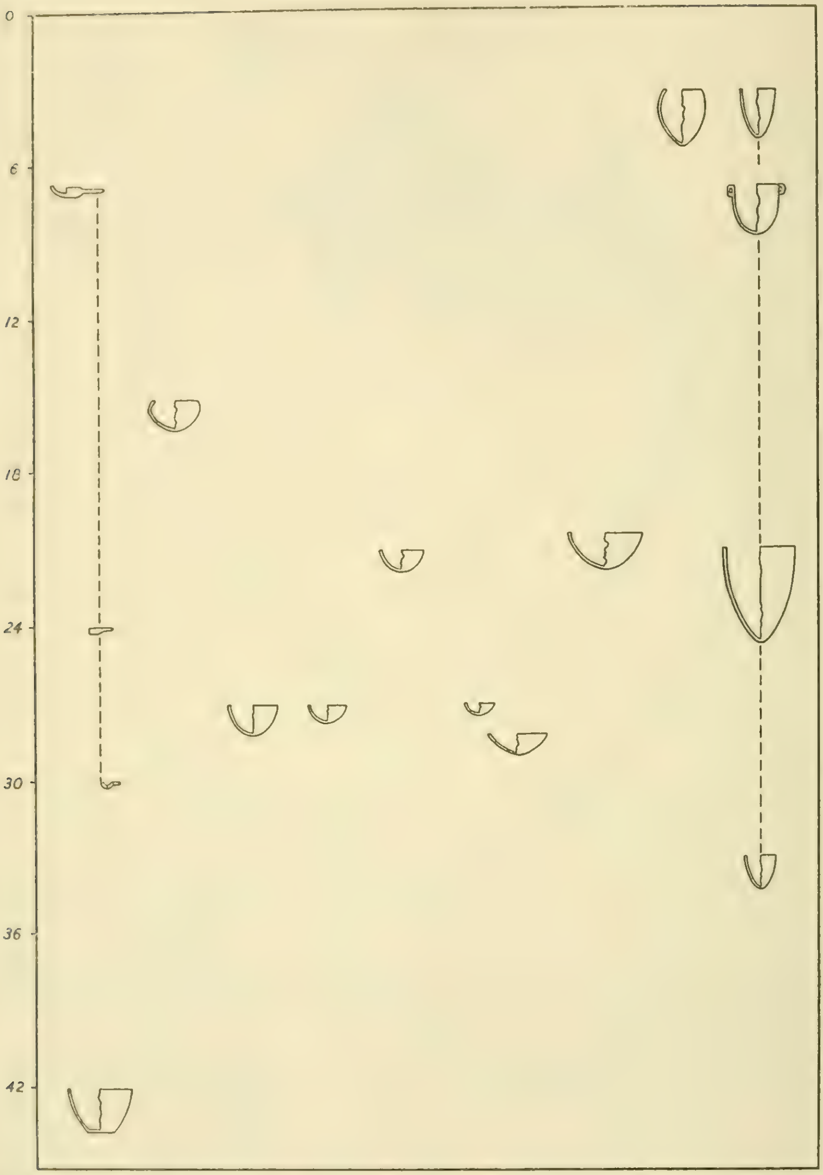

Figure 26.—Bowl and miniature dipper sequence from within the investigated area of the Clarksville site, 44Mc14. (Depth in inches indicated to the left of the figure.)

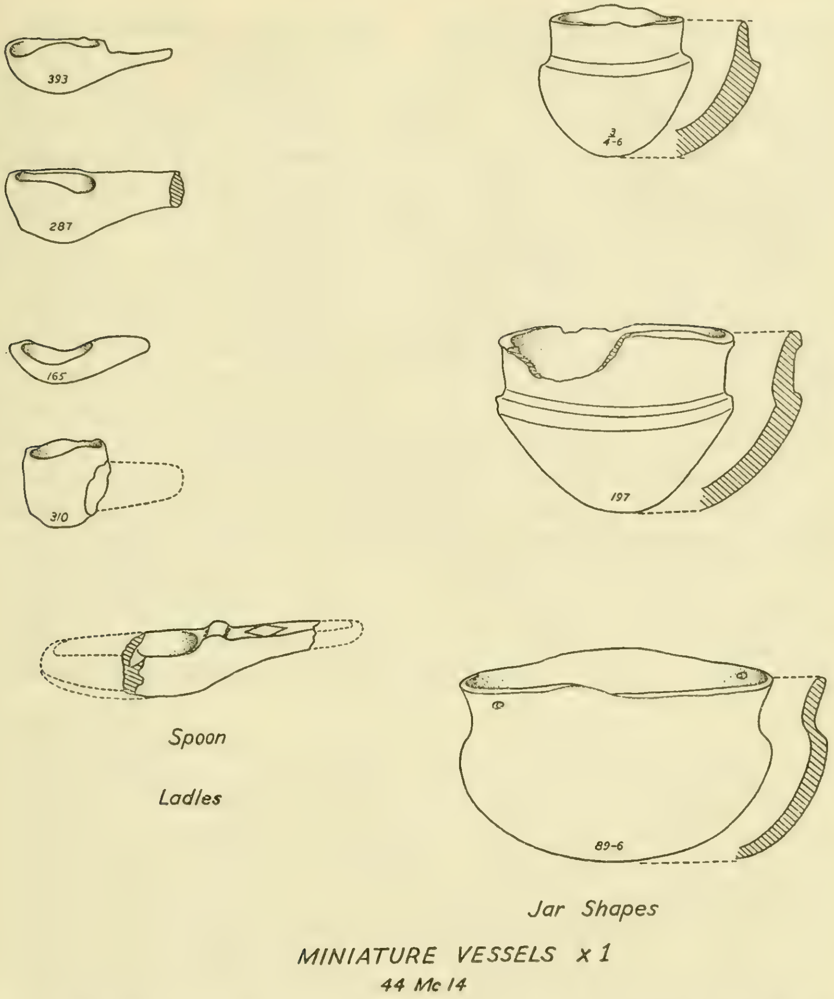

FIGURE 27.—Miniature vessels: dippers, spoons, and jar shapes. Clarksville site, 44Mc14.

outline. Molded vessels were decorated with either punctations or incised lines while the larger symmetrical vessels were given the same treatments as vessels put to practical use. Miniatures occurred in the form of dippers, bowls, and ollas. On the rim of one of the bowl shapes there were opposing holes where some sort of handle was attached as a means of suspension. This handle was probably fiber or a strip of leather. Handles of this type were never found on the larger vessels (fig. 27).

Adornos.—Adornos in the shape of animal effigies were found in various midden pits. How or where they were used could not be determined from the specimens themselves, for in no instances were any found attached to the lip areas of vessels or to any other object. Their function and purpose are unknown. One adorno is definitely in the shape of a snake's head showing both eyes and mouth (pls. 59, *o*; 60, *c*); another is some sort of mammalian form (pl. 60, *b*), in which the nostrils are indicated as well as the eyes and mouth; another is an attempt to depict a human form and is decorated with a geometric incised design (pls. 59, *q*; 60, *a*). All were made of a finely divided untempered paste, evenly fired, and were of a rich buff color. With the exception of the human form, all are undecorated.

Pottery disks.—Sherd disks occur in sufficient numbers at this site to be worth noticing. None are carefully shaped or completely perforated at the center, but a number bear shallow, cone-shaped depressions, centrally located on both faces. Their true function is unknown but it has been conjectured that these forms served as game counters or some such function. The method of manufacture is well illustrated in plate 61. A number are circular in outline, others are squarish with rounded corners, while still others appear to have been "chipped" into rough circles. Whether these represent various stages in the manufacture of completed disks is unknown. Pottery disks have been reported from both Iroquoian and Fort Ancient sites. They are much more common in the latter, especially in sites along the Ohio River. Parker (1922, p. 139) illustrates a number which were found in Jefferson County, N.Y.

Pipes.—Typical Woodland clay pipes are fairly well represented in the collection from this particular site. Plate 62, *b*, shows a probable developmental series in which the earliest pipe form is a straight tube, somewhat crudely shaped, terminating with a small, shallow depression at the broader end. It is bent ever so slightly away from the straight axial line. In this phase, stems are short and the connecting passage is slightly off center. During the developmental stages the bowl becomes not only larger but deeper, the elbow features grow more pronounced, and the whole culminates in the form and shape taken on by the steatite example illustrated in the series (pl. 62).

A number of effigy pipes fashioned from clay or stone were recovered from the soil that had been removed from the site and dumped on the nearby golf course. One clay pipe in particular, whose outline is in the form of a modified wedge, has a blunted and rounded apex and a beveled basal edge, giving the object an axlike appearance. It could easily be taken for an ax but for the presence near the butt end of two opposing bulbous protrusions, which give the impression that they were intended to represent the eyes of some creature rather than a form of decoration. It is thought that it was intended to represent a "catfish," since the whole is in keeping with the shape of a catfish's head (pl. 63).

The stem insert is located midway on one of the beveled surfaces, while the cone-shaped bowl connects with the stem hole via a tube of fairly large diameter (pl. 63).

There is nothing unusual in the clay; it seems to be some of the local product which was molded into this shape without the use of any additional aplastic. The paste is somewhat contorted. Firing the object in a reducing atmosphere turned its surface almost black; the surface is roughly smoothed but not polished.

In the tubular and elbow forms, pipe stems (pl. 62, *c*) are either round or elliptical in cross section. Bits are either modified by the addition of a small band of clay to create a thickened portion with parallel but slightly flaring sides ranging in width from 0.3 to 1.0 cm., or they are unmodified. In all cases the stems taper toward the bit. All stems are relatively short; those with the modified bit made it easy for the smoker to hold the pipe in his mouth with either the teeth or the lips.

In most cases the paste is finely divided and appears to be free of any added aplastic.

In a number of instances the bowls still retain the well-carbonized dottle. Others are free of this intrusion, while still others are darkened from the carbon of burning tobacco or other herbs driven into the clay walls.

A number of other clay objects recovered from the upper portion of the midden were tentatively called clay-pipe fragments since none conformed to the generalized pipe form. They were thought to be sections of platform pipes or pipes of which only the bowl was fashioned out of a lump of clay, with a connecting channel for the stem insert. All these fragments were recovered from the plow zone and may represent the very latest intrusion into the site.

Nondescript lumps of burned clay.—Scattered throughout the midden section of the Clarksville site were a number of nondescript, irregular lumps of burned clay—red, gray, or blackish brown in color (pl. 64, *a–g*). These varied in size, weight, and shape. They may have been the playthings of someone who, playing with a lump of wet clay, got tired of handling it and threw it into a handy fire which, in turn, converted the clay into "briquettes." Another possibility is that these objects were purposely manufactured and used in the so-called "hot-rock" cooking. These are just offered as suggestions. Still another possibility is that some experienced potter, wanting to test a batch of clay to be worked into vessels, fired trial lumps. One would hardly associate these lumps, which come from a rather late horizon, with similar objects from Poverty Point sites.

CLARKSVILLE CORD-WRAPPED PADDLE

(Pl. 65, *a, f, g, j, k, l, m*)

PASTE:

Method of manufacture: Either by coiling or placement of annular rings. This is shown by coil-line fractures and poorly bonded smoothed surfaces which display partial welding of adjacent coils or rings.

Temper: Medium fine to medium coarse sand. Only an occasional gravel particle is present. The quantity approaches about one-third of the total mixture, giving a rather sandy feel to the paste.

Texture: Moderately porous, slightly contorted in various specimens, and sandy. It ranges from a compact, fine, sandy mixture to a moderately loose, coarse, noncompact mixture with large amounts of sand.

Color: Ranges from gray, gray buff, browns of various hues, to blacks. Color is mostly represented on the exterior of the walls of either surface with a darkened central core.

Firing: Oxido-reducing atmosphere, with smudges of fire-clouds on the exteriors and rather intensely blackened on the interiors. With such poorly controlled methods of firing, a single vessel may run the gamut of color range.

SURFACE FINISH:

Modifications:

Exteriors: Exterior surfaces were, for the most part, carefully smoothed to assure sealing between joints. Only rarely was the surface poorly smoothed.

Interiors: Interiors were given two general treatments: Carefully smoothed to insure complete sealing of the joints, or smoothed with either the wet hand or some wet fragment of cloth which left the surface streaked and exceedingly rough with particles of the sandy aplastic still protruding from the surface.

Decoration:

Exteriors: Exteriors were impressed with either a paddle or the hand wrapped with either a fine (1 mm.), medium (1.5–2.0 mm.), or coarse (2.5 mm. —) two-strand simple-twisted cord with a single, nonoverlapping stroke, which imparted either a vertical, horizontal, or diagonal impression to the area from the rim to the base of the vessel. Lips were similarly treated in a number of cases but as a rule they were untreated.

Interiors: Interiors were mostly smoothed, some combed, and some roughly smoothed.

FORM:

Rim: Mostly vertical with occasional flaring, or folded.

Lips: Simple rounded, flattened, slightly rounded and tapered.

Body: Mostly deep wide-mouthed bowls. Impressions occasionally occurring on small olla forms.

Base: Conoidal.

Cord-wrapped paddle.—Cord-wrapped paddle refers to a treatment in which a paddle is wrapped with a series of cords, either loosely, closely, or criss-cross spaced and applied to the exterior surface of a vessel. These malleations may be applied either carefully or over the same area a number of times, creating a poorly defined effect in which the unit elements become so confused as to prevent determining the size and twist of the individual elements.

This treatment, applied over the entire exterior surface, was occasionally applied to the lip area as well. Rarely was it carried over into the throat region, but when it was employed it was not entire but spotty (Tolstoy, 1953, p. 27).

CLARKSVILLE TEXTILE IMPRESSED

(Pl. 66, *j–q*)

Paste: See Clarksville Cord-Wrapped Paddle.

Surface finish:

Modification: Same as for Clarksville Cord-Wrapped Paddle.

Decoration: Exteriors impressed with a number of different fabric weaves, which are discussed under the subtitle of "Weaving." In this ware the rims receive, in sufficient number, the true added strip on the exterior, thus adding to the overall thickness. In some cases this strip was added after the rim was given its initial treatment and the strip was added over this impression. The added strip was impressed afterward. The mechanics were revealed on sherds where parts of the rim strip were shed. Finger pinching and diagonal gashes, arranged in parallel fashion, occur along the exterior margin of lips, and pinching and gouging are present on the added rim strip.

Form:

Rim: Plain or added rim strips were added to either vertical or slanting rims. These may vary in width from 1.5 cm. to 2.8 cm. and protrude a distance of 1 cm. to 1.5 cm. beyond the normal rim width. On the normal plain rim there is no thickening.

Lip: Rounded, flattened and rounded, rounded and slightly tapering.

Body: Elliptical or slightly rounded.

Body wall thickness: Averages 8.0 mm.

Base: Conoidal.

In this study the various textile-impressed sherds were first separated as they made up the greater part of the types present. They were next subdivided into the various textile categories whenever an accurate identification could be made, such as plain plaiting, twilling, twining, plain twining, coiling. Net types are not included within this category. The exteriors of textile-impressed sherds were then treated with plastecene or liquid latex to develop the positives of the textiles used. In a number of instances the exterior surfaces showed that the textile used had been wadded up before the surface was patted, leaving behind an indistinct pattern which was vaguely distinct over small portions of the surface of the vessel. Such sherds were placed in the "Fabric Roughened" group. Whether the warp elements ran horizontally or vertically is of little consequence or importance, since it depended upon how the potter held the cloth, at his discretion, a trait which does not imply cultural meaning. In most instances the textiles and net were applied very carefully and not slapdash. There is practically no evidence that any of the textiles were wrapped around a paddle before they were malleated onto the plastic vessel's walls. Evidence shows that the textile was placed directly upon the exterior surfaces and firmly patted into the surface.

CLARKSVILLE FABRIC-MARKED

(Pl. 67, *a*, *b*, *e*)

PASTE: Same as for Clarksville Cord-Wrapped Paddle.

SURFACE FINISH:

Modification: *See* Clarksville Cord-Wrapped Paddle.

Decoration:

Design elements: Cord elements, ranging in diameter from 1.5 mm. to 3.0 mm.; all having a right-hand twist, wrapped either closely or loosely on a paddle or on the hand.

Design: Cord elements were malleated in no special design or direction. They were either parallel to, diagonal to, or vertical to the rim of the vessel.

Distribution: Cord elements completely covered the entire exterior. Very rarely was this decoration carried over onto the lip; it was extremely rare in the upper regions of the throat.

FORM:

Rim: Vertical or slightly flaring. Rim strips present.

Lip: Simple rounded, flat and rounded, or slightly tapered and rounded.

Body: See Hyco Fabric Marked.

The differences between Hyco Fabric-Marked and Clarksville Fabric-Marked are: (1) Clarksville has a sandier paste utilizing larger particles of sand making for a less compact paste; (2) Hyco Fabric-Marked was fired in an oxidizing atmosphere while Clarksville Fabric-Marked was fired in an oxido-reducing atmosphere; (3) exterior coloration; and (4) Hyco Fabric-Marked is thinner walled.

Fabric-marked or plain-plaited fabric occurs not only on jar forms with conoidal bases and slightly constricted necks but also on straight-sided, wide-mouthed deep bowls with conoidal bases. Whenever such treatment is found—whether in Indiana in the Baum Focus (Griffin, 1943); in Tennessee in the Candy Creek Focus as described by Lewis and Kneberg; in Alabama in the Dallas Focus of Haag; in Mississippi in the Saltillo Focus of Jennings, Cotter, and Corbett; in Georgia in the Dallas of Caldwell; in North Carolina in the Moore's Creek Focus of Miller; in South Carolina in the Horry Focus of Miller; or in Virginia in the Hyco River Focus of Miller—it constitutes one pottery cotradition indicative of spatial relationships on a relative time level. Such a concept is based upon the application of identical techniques applied to exterior surfaces of vessels in which there is variation of form typical of the Woodland tradition.

Fabric-marked has been described in the literature as "cord-wrapped stick," "cord-wrapped dowel," "fabric-marked," and "fabric impressed." All are synonyms. This similarity does not mean, necessarily, that there is a close generic relationship but only indicates a rather widespread distribution of such a technique on a pre-Adena

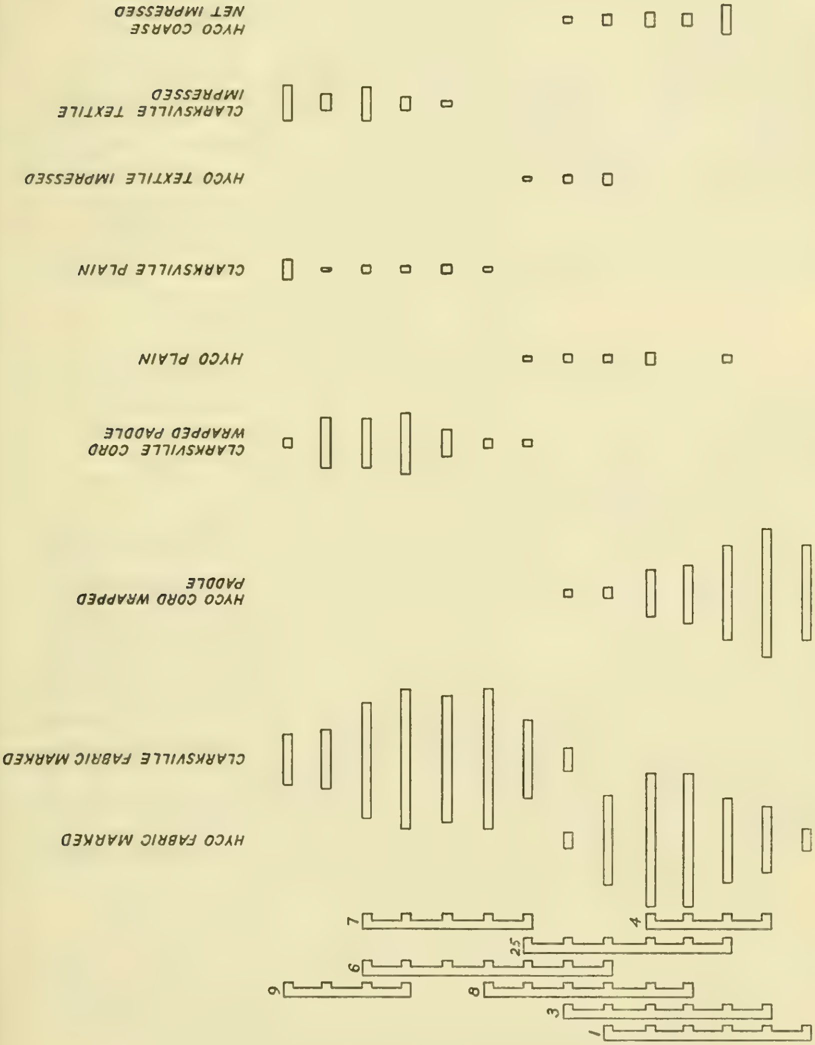

FIGURE 28.—Seriation group for Features 1, 3, 4, 6, 7, 8, 9, and 25, indicating the appearance and disappearance of various surface treatments. Clarksville site, 44Mc14.

level. Such a surface treatment is not restricted to the areas outlined above but is to be found elsewhere in the Northeastern United States, as well as in Ohio and adjacent States.

As elsewhere, fabric-marked pottery occurred as one of the early types not only in the John H. Kerr Reservoir area but also in the Philpot Reservoir area on the Smith River, a tributary of the Dan River.

Lewis and Kneberg have indicated that this type of surface treatment occurred over a rather long time span from the late Archaic and Adena times to late protohistoric horizons where it appears on other than sand-tempered wares. It is known to appear on crushed limestone-tempered paste and on crushed sherd (clay-grit) tempered wares. Wherever it occurs in this section of southern Virginia it is always found on sand-tempered wares.

CLARKSVILLE COMBED

(Pls. 60, *d*, *e*; 61, A; 65, *q*)

Paste: Paste characteristics are the same as those outlined for the general Clarksville Series.

Surface finish:

Modifications: Both the exterior and interior surfaces were smoothed, leaving uneven places on the walls.

Decoration: Subsequent to smoothing, the walls were scraped with a comblike object of some sort leaving behind a number of parallel ridges and grooves 3 cm. in width and from 5 cm. to 7 cm. in length. These dimensions designate the length of the stroke used and the width of the instrument employed. The groove width depends upon the width of the blunt teeth of the comblike object and the ridges upon the space between the individual teeth. Ridge width varies from 2 mm. to 4 mm. and groove width from 1 mm. to 2 mm. The stroke used was fairly short and the impressions either crisscross or overlap in a generally diagonal direction over the body of the vessel. This occurred either on the exterior alone or on both the exterior and interior of the same vessel. Parallel combing with short strokes is rare but it did occur. Sometimes the lips of vessels are finger-pinched or given a number of diagonal gashes or nicks arranged in a parallel fashion on the outer rim of the lip. Sometimes a number of punctations occur around the neck region.

Form:

Rim: Vertical to flaring. No pseudo-rim strip present.

Lip: Rounded, flattened, flattened and rounded, slightly tapering and rounded.

Body: Ollas of the typical general Woodland type—elliptical or elongate. Bowls were medium-shallow with an elongated body.

Base: Conoidal in the ollas and rounded in the bowls.

Shape: Ollas—see Hyco Cord-Wrapped Paddle.

Bowls were elongate, 16 cm. wide, 20 cm. long, and 8 cm. deep on the average. These forms are rare.

Combed: This term has been applied to surfaces which bear a number of parallel shallow grooves as though created by scraping a comblike object across them. This combing effect is not confined exclusively to exteriors but does occur on the interior surfaces of both bowls and ollas.

CLARKSVILLE PLAIN

(Pls. 65, 67)

PASTE: Same as for Clarksville Cord-Wrapped Paddle.

SURFACE FINISH:

Modification: By definition both surfaces are smoothed and left untreated as plain after first being textile-impressed. Surface is uneven and some areas are smoother than others, which are rough and sandy to the touch. Some interior surfaces have been combed after smoothing or roughly smoothed leaving a very sandy raspy surface.

Decoration: Usually there is none, but in a few rare instances the lips are treated on the exterior margins with a few "tick" lines or diagonal gashes.

FORM:

Rim: Mostly vertical and flaring. Rarely a thin coil thickening occurs on the exterior.

Lip: Rounded, rounded and flattened, tapering and rounded, or beveled.

Body:

Ollas: Eliptical or rounded.

Bowls: Subconoidal.

Base: Conoidal in ollas and subconoidal to conoidal in bowls.

Shape:

Ollas: Same as for Hyco Fabric-Marked.

Bowls: Small, shallow, with uneven rims upon a slightly hemispherical body, terminating in either a conoidal or subconoidal base. Diameters range from 16 cm. to 20 cm., while depths vary from 6 cm. to 10 cm.

Clarksville Plain is at no time plentiful. The term "plain" means that this is the final treatment before the vessel was fired. This was not the initial treatment but it was the result of obliterating the initial textile impressions that were applied prior to smoothing. It appears that the exteriors of all such vessels were initially textile-impressed and that the surfaces were subsequently smoothed prior to the final drying and firing. In a number of instances these smoothed surfaces were subsequently rubbed, creating a semipolished surface, which was velvety-smooth to the touch. In other instances the term "plain" is applied to small molded vessels whose surfaces are devoid of any treatment.

CLARKSVILLE CORN COB IMPRESSED

(Pl. 67, *d, k*)

PASTE: See Clarksville Cord-Wrapped Paddle.

SURFACE FINISH: ,

Modification: See Clarksville Cord-Wrapped Paddle.

Decoration:

Exteriors: The rolling or impressing of the corncob was usually confined to the neck portions of ollas and seldom applied to the shoulder areas. No vessels were found that indicate that the cob was impressed over the entire exterior surface. The cob impressions appear to have been implanted after the exterior was first fabric-impressed and then roughly smoothed. No folded rims or added rim strips were noted on this ware. The usual percentage of lips received this same treatment.

Interiors: Smoothed or smoothed and combed over a moderately regular and slightly uneven surface.

FORM:

Rim: Short and slightly flaring.

Lip: Rounded, flattened and rounded, and slightly tapered and rounded.

Body: Elliptical.

Body thickness: Averages 8 mm.

Base: Conoidal.

Shape: Typical Woodland olla.

"Corn Cob Impressed" is the term that applies to a surface treatment covering the upper part of the shoulder, neck, and rim areas of a vessel over which a corncob was rolled or impressed. In practically all instances the lower shoulder, body, and basal portions received textile impressions. Whether the remainder of the vessel received similar treatment before the corncob was applied could not positively be determined since the cob impressions, wherever they occurred, destroyed all former surface treatment. Perhaps it would be far more correct to call such a ware "corncob impressed on textile impressed," but since this is a rather long term, one must assume that the corncob impressions were superimposed upon textile impressions. In no instance within the reservoir was it found that the corncob was applied to the entire exterior surface of a vessel.

Vessels of this type were occasionally treated with limited amounts of finger pinching, usually in the neck and lip areas. Such treatment can be assessed as a variation rather than a distinct type in the mode of decoration.

CLARKSVILLE TEXTILE ROUGHENED

(Pl. 66, *l*, *p*)

PASTE: See Clarksville Cord-Wrapped Paddle.

SURFACE FINISH:

Modification: See Clarksville Cord-Wrapped Paddle.

Decoration: Exterior surfaces were either given a single treatment in which a wad of crumpled textile is impressed into the surface, or this treatment was compounded by overlapping, making it difficult, if next to impossible, to distinguish the techniques of weaving. At times single cord elements are recognizable only after plaster casts have been struck off, indicating that the individual elements ranged from 2 mm. or less in diameter. Often the surface was partially swiped over, obliterating most of the fabric impressions. Small areas of combing have been noted, which appear to underlie the textile impressions. Whether the surface was first combed and subsequently treated with textiles could not be determined.

Interior surfaces were either smoothed, partially smoothed, with the extruded sandy particles of the paste making the surface very raspy to the touch, or combed, leaving the typical parallel or crisscross striations.

Lips were mostly diagonally ticked along the exterior edge, less often pinched, and punctations are extremely rare.

Rims were seldom treated so as to give added decoration.

FORM:

Rim: Rims were either plain or folded over, giving the appearance of a rim strip. There was considerable variation in the size of this folding, not only in a single vessel, but within the group.

The width of this fold varied from 1 cm. to 3 cm. Whenever this overlap of coils is present the wall thickness is not appreciably increased. This type of rim is usually short, vertical, or slightly flaring.

Lip: Usually the simple variety is present, being either rounded, flattened and rounded, or slightly tapered and rounded. Rarely is the lip so flattened that part of it protrudes beyond the wall limits creating a crude sort of overhang.

Body: Elliptical.

Base: Conoidal.

General shape: Medium large to large ollas, wide-mouthed, with short to slightly elongated necks expanding gently to an elliptical body terminating in a conoidal base. Mouth width is less than body width.

Textile-roughened is a category that serves as a sort of catchall. It appears that the basic foundation is a fabric of some type that was either crumpled and impressed onto the wet clay or was patted on and a subsequent attempt was made at partial smoothing that helped to obliterate the pattern of the fabric.

CLARKSVILLE FINE NET IMPRESSED

(Pl. 66, *o*, *q*)

PASTE: Same as for Clarksville Cord-Wrapped Paddle.

SURFACE FINISH:

Modifications: After the vessel had been completely shaped and the walls hand-smoothed, the vessel was ready for the final treatment.

Decoration:

Exterior: A section of a fine-meshed net, whose mesh measured 3 mm. to 6 mm. square along a side, was crumpled and evenly impressed into the moist clay with practically no overlapping, leaving behind a distinct imprint of the net. The majority of the cord elements varied in diameter from 1.0 mm. to 1.5 mm. In a number of instances the surface was later lightly rubbed over, dimming the net impressions in spots and completely eradicating them in others.

Interior: Usually hand-smoothed and occasionally later combed.

Lips: Lips were later ticked, pinched, or diagonally gashed along the exterior margin. Punctations occurred rarely along the ridge of the lip.

FORM:

Rim: Rims are slightly outflaring or vertical in outline. Incomplete smoothing in a great number of instances, of the terminal coil or annular ring gave the rim a folded-over or an added rim–strip effect on the exterior. A great variation in width of this psuedo-rim strip effect was attained, since it measured from 1.0 cm. to 2.8 cm. In cross section this effect did not increase or affect the overall thickness of the rim, as a rule, but in a limited number of cases it thickened the upper portions of the rim slightly.

Lips: Lips were either rounded, rounded or flattened, or beveled with the highest part of the bevel to the inside of the vessel's orifice.

Form—Continued

Body: Generalized Woodland olla.

Body thickness: Averages 8 mm.

Base: Conoidal.

Shape: Medium to large in size. Conoidal base surmounted by an elliptical or rounded body, constricted slightly to form the neck. This neck gradually increased to a width equal to that of the body, terminating in some sort of simple lip.

CLARKSVILLE SIMPLE STAMPED

Although a minority type, Simple Stamped is present in the reservoir area. It is the end product of the use of a thong or root-wrapped paddle which was applied to a smooth or semismoothed surface, leaving the impression of the element with which the paddle was wrapped. It resembles the surface treatment attributed to either the Mossy Oak or Deptford Simple Stamped of the Southeast.

Among the other minority surface treatments there are punctations, either full or annular, which are sometimes delimited with incised lines occurring on plain molded ware, and incised pendants in the form of triangles, either single or multiple units, occurring on plain or textile-impressed wares (pl. 66, *a–i*).

It is felt that these forms should be called to the attention of the student in that they may become an integral in the composite picture, with more intensive archeological work in the nearby areas, and may become distinct or major types with significant cultural interdigitation.

Clarksville Textile Impressed, a ware introduced during the late Woodland, accounts for 77.2 percent of all the wares found at the Clarksville site. This is an all-inclusive ware in which all of the various textile impressions that can be recognized have been lumped into a single category. It is a sabulous and friable ware incorporating both olla and bowl shapes and ranges in color from buff through dark reds, grays, and dull browns to black. Occasionally a single large

DISCUSSION ON CERAMICS

Table 10.—*Total number of sherds and percentages of each exterior surface treatment for the Clarksville site (44Mc14)*

Exterior surface treatment	Lip sherds	Body sherds	Total	
			Number	Percent
Incised	4	8	12	0.1
Punctated	2	4	6	.0
Fine net impressed	14	95	109	.6
Corncob impressed	44	89	133	.7
Textile impressed	1,539	12,758	14,297	77.2
Plain	232	1,669	1,901	10.3
Textile roughened	23	737	760	4.1
Cord-wrapped paddle	52	452	504	2.7
Combed	39	701	740	4.0
Fabric marked	8	39	47	.0
Simple stamped	0	10	10	.3
Total	1,957	16,562	18,519	100.0

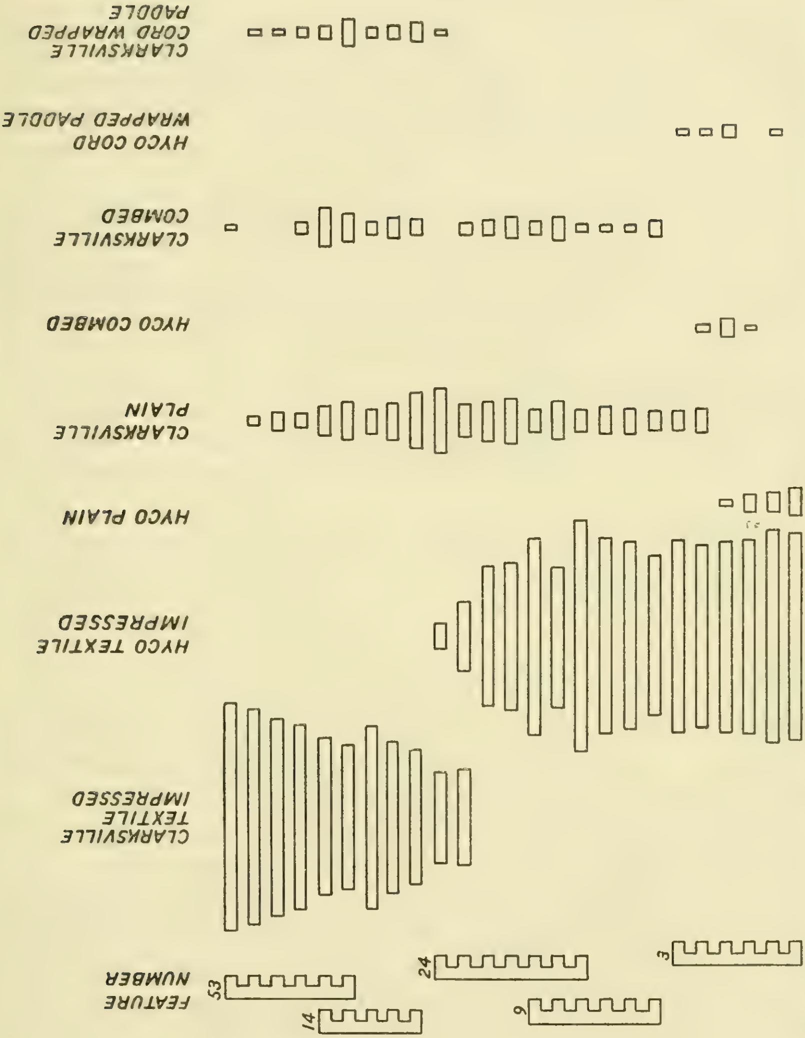

FIGURE 29.—Seriation group for Features 53, 14, 24, 9, and 3, indicating the appearance and disappearance of various exterior surface treatments. Clarksville site, 44Mc14.

sand particle, or gravel, occurs, taking up the whole of the wall thickness. Some sherds are tempered with very small grains of sand, forming a compact paste less contorted than when the larger particles are utilized. Wall thickness is never uniform; neither is the vessel perfectly symmetrical around the orifice.

Rim, body, and base sherds indicate the various vessel shapes. Fifteen percent of the total number of sherds of this group are either rim or base sherds, which appears to be a rather high percentage. A conoidal olla or jar deep bodied, with a slightly constricted neck and either a verticle or slightly everted rim—sometimes toward the terminal phases of the site, with a suggestion of a rim strip—is common. Similarly, a deep bowl corresponding in shape to the olla but lacking the neck constriction is common during the time span represented. Both the deep-bodied bowl and the olla have the characteristics attributed to vessels associated with the Middle Woodland culture. At a later date, but still well within the Middle Woodland, a subconoidal shallow bowl was introduced, which constitutes a third major shape. At this same time molded dippers—both miniature and utilitarian in size—were introduced. Many of the miniature dippers were recovered whole (pl. 58), while none of the larger ones were recovered complete.

In addition to dipper handles, other handle forms occur either in the shape of pierced vertical lugs flush with the lip or in the form of crudely molded loops placed well up on the neck portion of small vessels. These are assigned to the Middle Woodland culture. Only one vessel complete enough to indicate the correct position of this type of handle was found. This is a small, deep-bodied, fabric-impressed bowl (pl. 59, *d*) whose impressions consist of a series of diagonally scored parallel trailing lines, which originate near the lip and trail downward toward the base of the vessel.

Added rim strips on the rims of ollas are fairly common during the Late Woodland, giving a certain Iroquoian-like look to these vessels. A great number of them are marked with a cord-wrapped paddle or are textile-impressed, much like those found in the vicinity of the Great Lakes region and in the Chesapeake–Potomac area of Holmes. The strip upon one vessel may vary in width and be partially obliterated by blending in with the walls of the rim. Widths may vary from 1.0 cm. to 3.0 cm. Most rim strips were unaltered but some were pinched, ticked, or similarly treated along the outer portions of the lip or on the strip itself. No punctations or incising were noted on this feature.

One individual sherd bearing a single row of punctations on the lip region was found in the upper levels of the village midden. Since this particular sherd is not very large, it is difficult to ascertain whether it was part of a Clarksville Plain vessel or a Clarksville Fabric-Impressed vessel whose neck and rim sections were smoothed.

Punctations have been noted mostly on sherds of Clarksville Plain and only rarely on Clarksville Fabric-Impressed and Clarksville Combed. Usually, such treatment was delimited by incised lines to form horizontally placed zones or was confined within triangular areas. Punctations may vary in diameter from 2.0 mm. to 3.0 mm. These were made either with a hollow tube or some sort of a solid tool. In plate 66, *c*, *d*, *e*, and *i*, it appears that the punctations were made by means of either a hollow grass stem, a small reed, or a small bone, while those illustrated in *a*, *b*, and *f* of this plate were made with a solid object; *g* shows a row of triangular pyramidal punctations, which originally occurred around the neck portions of a large olla, and *h* is unique in that a small ridge of clay was first built up and then slashed or gashed by some sharp-pointed tool or bladed object.

WEAVING

The art of weaving dates back to the inception of culture, and its progress, along with various cultural changes, is reflected in the different materials utilized. The skill manifested is not always indicative of the degree of culture attained. Practically nothing is known of the skills and techniques of the aborigines of Virginia, but Adair (1775, pp. 422–423) briefly described the Indians of the Carolinas performing this art during the latter part of the 18th century. He states:

> Formerly, the Indians made very handsome carpets. They have a wild hemp that grows about six feet high, in open, rich, level lands, and which usually ripens in July; it is plenty on our frontier settlements. When it is fit for use, they pull, steep, peel, and beat it; and the old women spin it off the distaffs, with wooden machines, having some clay on the middle of them, to hasten the motion. When the coarse thread is prepared, they put it into a frame about six feet square and instead of a shuttle, they thrust through the thread with a long cane, having a large string, through the web, which they shift at every second course of the thread. When they have thus finished their arduous labour, they paint each side of the carpet with such figures, of various colours, as their fruitful imaginations devise; particularly the images of those birds and beasts they are acquainted with; and likewise of themselves, acting in their social, and martial stations. There is that due proportion, and so much mild variety in the design, that would really strike a curious eye with pleasure and admiration. J. W—t, Esq; a most skillful linguist in the Muskhoge dialect, assures me, that time out of mind, they passed the woof with a shuttle; and they have a couple of threddles, which they move with the hand so as to enable them to make good dispatch, something after the manner of our weaving. This is sufficiently confirmed by their method of working broad garters, sashes, shot pouches, broad belts and the like, which are decorated all over with beautiful stripes and chequers. . . .
>
> . . . In the winter season, the women gather buffalo's hair, a sort of coarse brown curled wool; and having spun it as fine as they can, and properly doubled

> it, they put small beads of different colours upon the yarn, as they work it; the figures they work in those small webs are generally uniform, but sometimes they diversify them on both sides. The Choktah weave shot-pouches, which have raised work inside and outside. They likewise make turkey feather blankets. . . .

Fibers from the milkweed plant, the inner bark of slippery elm, and basswood were processed and utilized in the weaving of cordage and textiles. "The art of weaving mantles of mulberry bark fibers was found by the first explorers, but has long been obsolete. Hammocks were used as baby cradles instead of cradle-boards" (Speck, 1907, p. 293).

The textiles, which were once manufactured by the Virginia Indians, are revealed only through the preservation of their imprints upon the exteriors of various clay vessels made on the still plastic clay during one stage of manufacture. When the vessels were fired these imprints were assured a permanence that otherwise might have been destroyed by the temporary nature of the materials from which they were made.

Before textiles could be made the spinning of fibers into thread or cordage had to take place. Even before this, certain suitable and easily separated fibers, either plant or animal, had to be chosen. From the meager evidence at hand it cannot be stated positively what the fibers used during this early phase were, but it is known that the Indians made use of buffalo hair, wild hemp, silkgrass, and other plant fibers when first contacted by the white man. Spindles as well as crude spindle whorls were then in use. Cordage varied in degrees of fineness. Fabrics show that certain elements are thin and uniform in thickness, while other elements are thick and may show slight variations in diameter in various sections of the textile. Perhaps this difference in varying degrees of fineness reflects not only individual differences in skill but, somewhat, the purpose for which the textile was to be used.

Peter Halm (Holmes, 1896, p. 33) noted that the Iroquois spun wild hemp (*Apocynum cannabinum*) cordage by rolling upon their bare thighs the retted fibers which were afterward dyed and woven into textiles. Adair (1775) noted that fixed loom frames were in use among the Cherokee, "and instead of the shuttle, they thrust through the threads with a long cane, having a large string through the web, which they shift at every second course of the thread."

Holmes (1901, pp. 397–403) determined that:

> The several kinds of textile markings are not equally distributed over the country, but each seems, to a certain extent, to characterize the wares of a particular region or to belong to particular groups or ware, indicating, perhaps, the condition and practices of distinct peoples or variations in initial elements affecting the art. There may also be a certain order in the development of the

various classes of impressions—a passing from simple to complex phenomena, from purely mechanical to conventionally modified phases of embellishment.

Pliable fabrics as aids in modeling.—Pliable fabrics, such as sacks, nets, and cloths, were made use of as exterior supports in holding or handling the vessel while it was still in a plastic condition. Mr. Mooney says that the Cherokee use a rag when lifting the pot at one stage of its manufacture, and it is easy to see that cloths or nets wrapped about the exterior surface of the plastic walls would serve to prevent quick drying and consequent cracking of the clay along weak lines. Binding up with cloths or nets would interfere with the deforming tendency of pressure during the modeling process and of sinking from weight of the plastic walls.

The technique of weaving nets had its inception during the Archaic Period. Early nets were much coarser than those made at a later Woodland date. Evidence from Early Woodland sherds shows that these two types of nets were made by using simple knots (figs. 30, 31). Mesh is wide and uniform and evenly spaced. Cord diameter in the early form is greater than that in most of the late varieties.

Most fabrics are simple twined. In this technique the warp elements are held in place by twisting the woof strands half around at each intersection and inclosing the warp strands in alternating pairs as shown in figure 32 (Holmes, 1896, fig. 5). These twisted woof strands were evenly spaced, creating a loosely woven fabric, while the warp strands formed loops through which a heavier strand was passed.

A more open simple-twined fabric, constructed along this same principle, is illustrated in figure 33 (Holmes, 1896, fig. 6). It is one of the various types impressed upon sherd material. The cordage is slightly heavier than the preceding sample. Whether these bits were from mantles, shawls, etc., could not be determined.

In the earlier studies by Holmes, it is seen that he very nearly determined both the true source of the trait of applying textiles to the exteriors of clay vessels and the aerial distribution of this trait, hinting that certain time-space factors could be designated when more became known of the archeology of the eastern section of the United States. It is here proposed to add another link to this study.

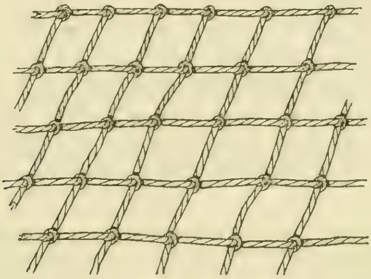

FIGURE 30.—Net impression from sherds recovered from the Clarksville site, 44Mc14. (See Holmes, 1896, fig. 27.)

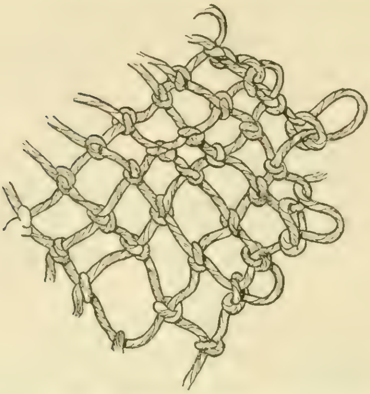

Figure 31.—Net impression from sherds recovered from the Clarksville site, 44Mc14. (See O'Neale, 1942, p. 159, fig. 7.)

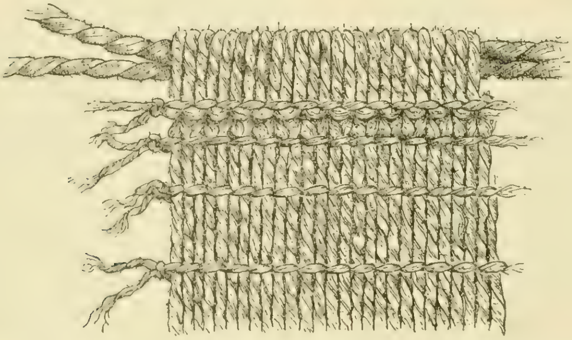

Figure 32.—Textile impression from sherd material, Clarksville site, 44Mc14. (See Holmes, 1896, fig. 5.)

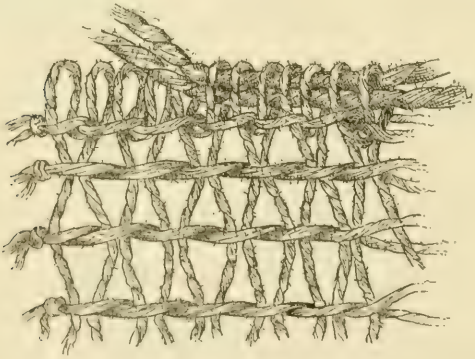

Figure 33.—Open simple twined fabric impression from sherd material, Clarksville site, 44Mc14. (See Holmes, 1896, fig. 6.)

This study is not intended as an exhaustive treatise on the art of textile making or the techniques employed but rather simply to indicate the existence of a variety of techniques and the end results of each as indicated upon the surfaces of sherds.

Mason (1904, p. 416, fig. 148) borrowed from Holmes an illustration in which a woman is represented as seated beneath a tree weaving a basket held suspended from one of the limbs. He says "It will be remembered that in an ancient drawing showing how a Virginia woman made basketry the woman is seated in precisely the same fashion and is working from below upwards." That this was the usual method of procedure cannot be supported, since it has never been unequivocally documented.

Weaving has been defined as "a process which unites a series of parallel strands, or warps, by a crossing strand, or weft, which may interlace, wrap, or twine, as it moves back and forth across the warp strands to form an expanded surface" (Kissel, 1918, p. 83).

In defining the terminology, the warp is a series of yarn stretched upon the loom preparatory to weaving. "The warp series is called the setup. Weft, also called woof or filling, is the weaving yarn carried by a bobbin or shuttle from one side to the other across the warps" (O'Neale, 1942).

Twined baskets are perhaps a survival of an earlier technique; twilling was rather widespread and possibly slightly later. Some textiles were utilized as articles of clothing during cold and inclement weather to be discarded at the end of these periods; hence, very little labor was expended upon textiles for everyday wear. Ceremonial articles called for careful work and were more elaborate. Vines, grasses, and other local flora, together with bits of fur and feathers, as well as paint, furnished materials for this industry. On the other hand, mats and some baskets were made from strips of split cane and small rods from trees.

TEXTILES AND TEXTILE TECHNIQUES

It has been indicated earlier that

> the ceramic art was intimately associated with the textile art and the earthenware exhibits traces of this intimacy as one of its most constant characteristics. These traces consist of impressions of textile articles made upon the plastic clay during manufacture. . . . The textile art is no doubt the older art in this region, as elsewhere, and the potter, working always with textile appliances and with textile models before her, has borrowed many elements of form and ornament from them. Textile forms and markings are thus a characteristic of the initial stages of the ceramic art. . . .
>
> Whether the art passed through the textile stage with all peoples may remain a question, for the traces are obliterated by lapse of time. We observe in passing southward through the United States that the textile-marked wares become less and less prevalent, though enough are still found in Florida and

> other Gulf states to suggest a former practice there of the archaic art and a development from it.
>
> Textile markings[10] found on pottery are of five classes: First, impressions from the surface of rigid forms, such as baskets. Second, impressions of fabrics of a pliable nature, such as cloths and nets. Third, impressions from woven textures used over the hand or over some suitable modeling implement. Fourth, impressions of cords wrapped about modeling paddles or rocking tools. Fifth, impressions of bits of cords or other textile units, singly or in groups, applied for ornament only and so arranged as to give textile-like patterns. In addition, we have a large class of impressions and markings in which textile effects are mechanically imitated [Holmes, 1903, pp. 67–68].

As indicated earlier, 77.2 percent of all sherd material is textile impressed. These impressions vary in form, denoting that the aborigines made use of various techniques in creating such textiles. Since it is impossible to determine the kind and nature of the fibers used, the next question is the type of loom used, if there was one, and the techniques employed to produce the various textiles.

A number of early travelers and pioneer ethnographers have described the art of weaving as they found it among the aborigines, but for the most part with indifferent success. A common opinion that weaving is an outgrowth and elaboration of basketmaking is based on the continuous distribution of this industry from the Arctic to the tip of South America in the New World, as well as in adjoining parts of Asia. It has been suggested that the art of weaving in the New World may have emerged from Asiatic sources, but this has never been proved.

An early drawing shows a Virginia Indian woman holding the loose ends of a primitive loom in her left hand and manipulating the elements with her right to create a narrow banded fillet. In this drawing neither shuttle, shedding devices, nor batten board are indicated. These omissions indicate that a type of "finger weaving" was in progress. Contrary to Wissler (1922, pp. 55–56), who says that in finger weaving the

> warp threads are hung loosely from a horizontal support and the fabric built from the top, the weft being pushed upward into place. . . . In downward weaving there are neither batten nor shedding devices, the fingers taking their place, though a bodkin or other pointed instrument may be used to force the weft into position.

---

[10] "The few investigators who have attempted the description of textiles in their archaeological reports have encountered a lack of standardization of technical terms. Various specialists, in approaching the problem of typology, have either closely delimited their fields, attempted their systematization on superficial similarities, or mixed their determining elements. Thus, there is excellent work in basketry and loom work, but conflicts where the authorities' considerations overlap. 'Wrapped Twining' had different connotations for Mason and Amsden, and a single technique is designated as 'twilled twining,' 'diagonal twining,' 'twined openwork,' and 'zagzag twining.' Kissel groups 'coil without foundation' as a 'coiling' technique, while Mason and Amsden recognize it as a separate class of techniques, called 'looping.' Davidson used the term 'knotless netting' to refer to the same weave. Frequently classifications, developed on the basis of the manner of combination of the weaving elements, include 'wickerwork,' which is defined by the type of material making up the elements" (Miner, 1936, p. 183).

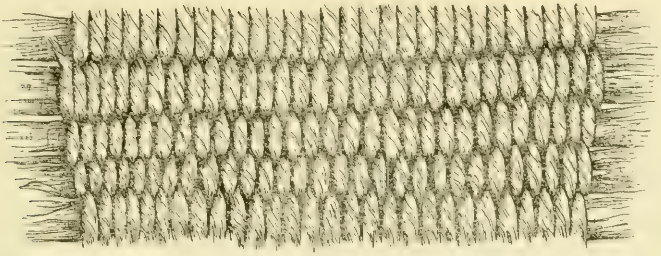

FIGURE 34.—Positive impression of textile obtained by the use of latex on the surface of sherd from Clarksville site, 44Mc14. (See Holmes, 1896, fig. 23.)

The loom illustrated not only has an attachment to the tree at one end, but the other is held firmly in position by the weaver's left hand leaving the right free to manipulate the weft elements into position across the warp. Apparently two loom types were known and used by the aborigines of southern Virginia, as indicated by drawings and the various records of the early settlers.

A series of fabrics has been determined from a large number of textile-impressed and fabric-marked sherds. We also found a number of sherds bearing the impressions of coiled basketry. This type displays large corrugations (fig. 34), in which the impressions of parallel elements are to be seen. By taking latex impressions of the surface of such sherds, it was definitely established that this type of basket existed throughout the basin. Bushnell (1935, p. 50) pointed out that coiled baskets were thought to be unknown to historic Siouan and Algonquian tribes of Virginia and that they were evidently made and used by groups which preceded them and by whom "the early earthenware vessels had likewise been fashioned." He, too, found fragments of pots bearing basket impressions which he attributed to the "oldest type of pottery found on the site." The type to which he referred is more likely what the writer has termed "fabric-marked" of the type found at the Hyco site (44Ha7).

Ashley (1932) found basket-impressed sherds at Etowah and Carters Quarters in Georgia. There is a time differential here as these sites are much later than those of southern Virginia and belong to the Mississippian culture.

Harrington (1922), on the other hand, found in the Ozark Bluff Dweller sites of Arkansas and Mississippi several specimens of coiled baskets which have been attributed to the early Woodland culture.

Then, Byrd (1901) stated:

> One of the men, who had been an old Indian Trader brought me a Stem of Silk Grass,[12] which was about as big as my little Finger. But, being so late in the Year that the Leaf was fallen off, I am not able to describe the Plant.

---

[12] Silkgrass (*Agrostis hyemalis*) is sometimes known as hairgrass or ticklegrass.

> The Indians use it in all their little Manufactures, twisting a Thread of it that is prodigiously Strong. Of this they make their Baskets and the Aprons which their Women wear about their Middles, for Decency's Sake. These are long enough to wrap around them and reach down to their Knees, with a Fringe on the under part by way of Ornament.

Lawson (1714), when alluding to the Indians of North Carolina and to their maufactures, stated:

> The Indian women's work is to cook the victuals for the whole family, and to make mats, baskets, girdles, of possum hair, and such like. . . .
>
> The baskets our neighboring Indians make are all made of a very fine sort of bulrushes, and sometimes of silk grass, which they work with figures of beasts, birds, fishes, etc.

Holmes (1903) in describing the pottery from the Piedmont of Virginia states:

> In northwestern North Carolina and southwestern Virginia a somewhat marked local variety of pottery is developed which partakes to some extent of the character of the ware of the far Northwest, and probably represents some of the tribes which occupied the Virginia highland about the period of English Colonization. Indeed, traces of this variety occur on the James in its middle course, and appear on the Dan, the Yadkin, and possibly on the upper Shenandoah. . . . The pottery is always rude, and consists of simple pots, nearly always showing the soot-blackened surfaces of culinary utensils. Their strongest characteristics are the very general presence of rudely modeled looped handles, which connect the outcurved rim with the shoulder, bridging a short, slightly constricted neck, and the frequent occurrence of a thickened collar, sometimes slightly overhanging, after the Iroquoian style, but marked with cords and cord indenting, characteristic of the rim decoration of the Upper Mississippi and Lake Michigan pottery. More extensive collecting may enable us to separate these wares into two or more groups or varieties. . . . The early wares are minus handles of any sort and the thickened collar is placed among minority of pottery traits of the early horizons. Cord marking came in early and persisted up into the late horizons, but to a diminishing amount.

Twined bag impressions, listed by Lewis and Kneberg (1946) as "Fabric-marked or Cord-Wrapped Dowel-Marked of the Baumer type," are well represented in the reservoir basin. They state:

> It is apparent that the fabric was heavy, possibly matting. There is no evidence to indicate that the markings were incidental to the shaping of the vessel in a basket, since the corrugations resulting from the heavy warp do not run consistently in any one direction on the vessel. In making this statement we do not overlook the possibility that the origin of the style might have evoked from a technique of constructing the vessel within a basket.

This type is the most prevalent ware found in the early Candy Creek Focus and the only type found in the Watts Bar Focus. The exception to this, that the Tennessee ware differs from that of the Buggs Island Reservoir ware in being limestone-tempered rather than sand-tempered, in itself indicates a much later developmental pottery sequence. A few sherds of this same type were found in the Hamilton Focus, while Harrington (1922) reported finding the same type in sites on the upper Tennessee River. Griffin (1938) describes this ware as "Type III" from cave sites in the Norris Basin, Alabama, and (1939) as "fabric plain plaited" in the Wheeler Basin, Alabama. Haag (1939) described this type under "Long Branch Fabric Marked," also a limestone-tempered ware, as associated with the Copena complex.

Guernsey and Kidder (1921) describe "Twined weaving" in bags most competently. They state:

> The bags are flexible seamless sacks with full, round bodies and long, gradually constricted necks. They range from 1½ inches to 2 feet or more in length. All are made in the same way, of close twined weaving; the majority of specimens have both warp and weft of two ply apocynum string, though some have yucca warp and apocynum weft. The combination of apocynum warp and yucca weft is rare. (By no means is the present writer insinuating that these fibers were used by the aborigines of southern Virginia and northern North Carolina.)
>
> Our study of the weave was begun by examining the bottoms of the bags in order to make out how the preliminary "set-up" of the warp cords was accomplished. By dissecting several fragmentary specimens we found that there were two methods, one common, the other rare. The former was as follows: six long strands were laid across each other, three above and three below; the middle strand of each set runs out straight, the others are bent so that their ends radiate from the common center. There are thus produced twelve original warps. The second method consists of twisting three strands about each other and then bending their ends so that they radiate and form six warp cords.
>
> The above systems are very simple and practical and avoid the ugly lump and the potential weakness in the fabric which would have been the result of knotting the warps together at the base. The method of inserting the weft also obviates knotting; a single long string is worked over and under the radiating warp cords close about their common center; in reality, it is pulled up very tight and holds the warp firmly together. When a circuit of the spoke-like warps has been made, the two ends of the weft string of course come together; they are then combined into a single strand of twined weaving, which continues spirally around and around to form the body of the bag fabric. . . . (p. 66).
>
> We have not mentioned the actual method of inserting new warps. Two ways were employed. In one the string to be added was looped and laid between two of the old warps thus forming two new ones; the first two or three turns of the weft attach the new strands to the old warps on either side of them holding all firmly in place; the next turn of the weft takes in each new element separately and the weaving continues normally.
>
> In the second method, the strand to be added was doubled into a loop, making, as before, two new warps; the string at the bend of the loop was twisted apart into its two component plies and one of the old warps was threaded through the resultant opening; the loop was then slid up the old warp and brought close against the last woven turn of the weft, thus producing a pair of new warps one on each side of the original one; on its next revolution about the bag the weft takes in the two new warps and holds them solidly. . . . (p. 68).
>
> We now take up the twining of the weft, which is perfectly simple and regular. It begins at the very bottom and continues in a close spiral to the mouth.

> Fresh length of weft strings were not tied to the ends of the old ones (these weavers seem to have had a deep seated aversion to knots), but were run a little way with them until firmly set. . . . The method of procedure is unknown; it is probably, however, that the work was downward, the base of the bag having been attached to a limb or pole and the warps allowed to hang either free or tied in loose bunches to prevent tangling (see a picture of a Virginia woman weaving a baglike basket, Mason, 1904, fig. 148 (p. 69)).

Impressions of this same type occur on a number of sherds in the Clarksville site (44Mc14) and the Hyco site (44Ha7) and the insertions of new weft elements are readily recognized.

A single sherd carried the imprint of a twined fabric terminating in a well-worked border or edge. This particular specimen is practically identical with the one illustrated by Holmes (1896, pp. 33–34) in which he describes the technique thus:

> The construction of the border or rim of this bag is quite remarkable as shown in figure 8, the upper ends of the vertical strands are gathered in slightly twisted groups of four and carried up free for about two inches when they are brought together and plaited with remarkable neatness into a string border.

Whether the fabric used on this particular specimen was a bag or a portion of one cannot be identified. There is a slight difference between the two specimens: The interval between the plaited border and the twined, woven section of the Clarksville specimen measured slightly over three-quarters of an inch rather than the 2 inches indicated by Holmes.

A very elementary type of twined weaving (fig. 36) appears in which the woof is a series of single threads bound by two series of warp threads which are interwoven at right angles and twisted half around upon themselves, holding each woof element firmly, thus creating a loose, open, netlike fabric. There are a number of varieties but all are essentially an elaboration of this basic pattern. Some have double warp elements at right angles to the woof threads; others are woven on a diagonal, etc.

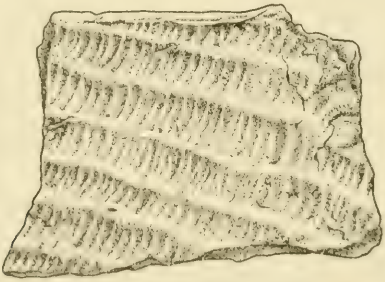

FIGURE 35.—Sherd showing the negative impression of textile.

Another type (fig. 37), which is rather prevalent, is a closely twined style in which the strands are well twisted. The very nature of the textile demands that some sort of stationary frame had to be utilized in order to arrange the warp and woof elements that were intertwined therein.

To try to reproduce this textile a rectangle of pegs was set up upon which the elements were stretched (pl. 68 *c*). In laying down the warp elements, indicated by the white threads, it was found that the upper right and the lower left corners were so constructed that no weft elements, the dark threads, were necessary. This held true for the opposite corners and the warp elements. The rough diamond-shaped space intervening between the four corners demanded the use of both warp and weft elements.

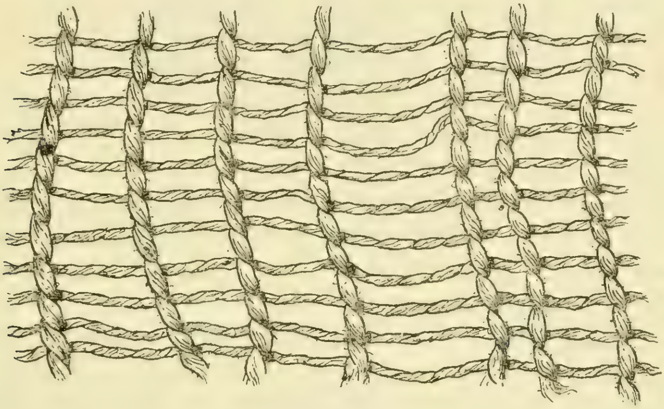

FIGURE 36.—Twined fabric from sherd impression, Clarksville site, 44Mc14. (See Holmes, 1896, p. 41, fig. 19.)

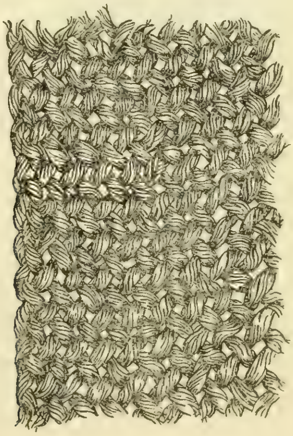

FIGURE 37.—Twined fabric from sherd impression, Clarksville site, 44Mc14. (See Holmes, 1896, pl. 7 *c*.)

In figure 38 an attempt is made to depict a type of fabric which appears to resemble the one illustrated by Holmes (1884, fig. 86). The fabric described was preserved by copper salts. He and Mr. Farquharson (1884, pp. 411–412) state that:

> "The warp is composed of four cords, that is *two double and twisted* cords and the woof of *one* such double and twisted cord which passes between the two parts of the warp; the latter being twisted at each change allowing the cords to be brought close together so as to cover the woof almost entirely." . . . This cloth has a general resemblance to ordinary coffee-sacking. . . .
>
> Although I am not quite positive, it is my opinion, after having examined the specimen carefully, that the body of the cloth belongs to my first group and that the border only is of the second group. . . . A fine preserved bit of cloth . . . was recently found fixed to the surface of a copper image from one of the Etowah mounds in Georgia.

A unique type of fabric (fig. 39) was made of a series of warp threads which were either plaited or braided and attached to what may be single woof threads. Holmes (1884, p. 418) indicated that such a technique was used in the manufacture of sandals by the ancient cave inhabitants of the State of Kentucky. "The fiber has the appearance of bast and is plaited in untwisted strands."

In the various drawings, fillets of fibers are indicated at either end of the textile which do not appear in the impressions gathered from the many sherds. By so doing, it is hoped the specialized techniques employed will be made clear to the reader.

It is true that Holmes illustrates and describes a number of textiles but he does not always describe the technique by which they were manufactured. The presence of a permanent or fixed frame upon which textiles were manufactured is one point that the present study establishes. The next point is the additional areal distribution of the same techniques. That this particular area was influenced by other cultures existing in Tennessee, which is highly doubtful, or those cultures to the northeast, which seems more plausible, would indicate a cultural linkage which heretofore has not been mentioned.

With regard to the use of fibers and string, the writer came across one interesting piece of ethnological information thought wise to pass on to others. This is the existence of and the use by the Indians of southern Virginia of what might be called a "quipu." Lederer (*in* Alvord and Bidgood, 1912, p. 143) suggested this when he said:

> An account of time, and other things, they keep on a string or leather throng tied in knots of several colors. I took particular notice of small wheels serving this purpose among the Oenocks, because I have heard that the Mexicans use the same.

This whole passage is highly suggestive of the quipu.

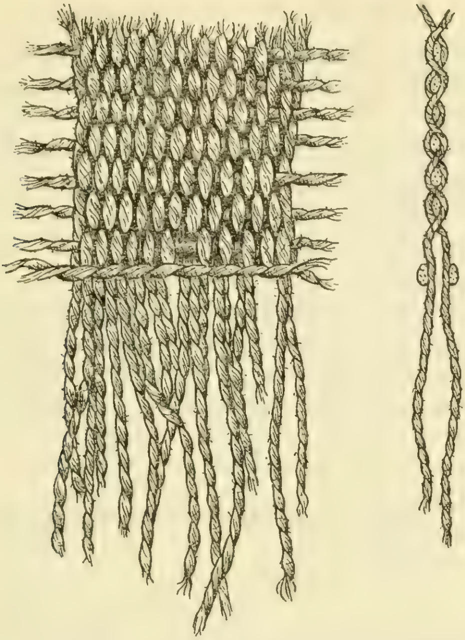

Figure 38.—Textile from sherd impression, Clarksville site, 44Mc14 resembling the one depicted by Holmes, 1884, fig. 86.

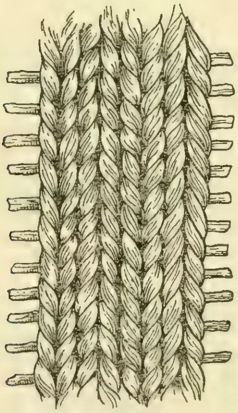

Figure 39.—Plaiting recovered from impression on sherd material, Clarksville site, 44Mc14. (See Holmes, 1884, fig. 101.)

BONE AND ANTLER ARTIFACTS

Under the bone and antler industry are included objects made of turtle shell and teeth, since the same considerations seem to apply to them.

Bone scrap was rather plentiful in the Clarksville Component, but artifacts were comparatively few. Bone tools cover a fairly wide range in form and function. Since the Indians of the John H. Kerr Reservoir Basin made only simple functional tools, very elaborate or decorative forms are not expected. All bone tools were manufactured by fracturing, cutting, shaving, abrading, and finally polishing. The very nature of the material determined the degree of modification and the functional form intended. Many of the artifacts were very effective tools made with very little effort. This is especially true of the

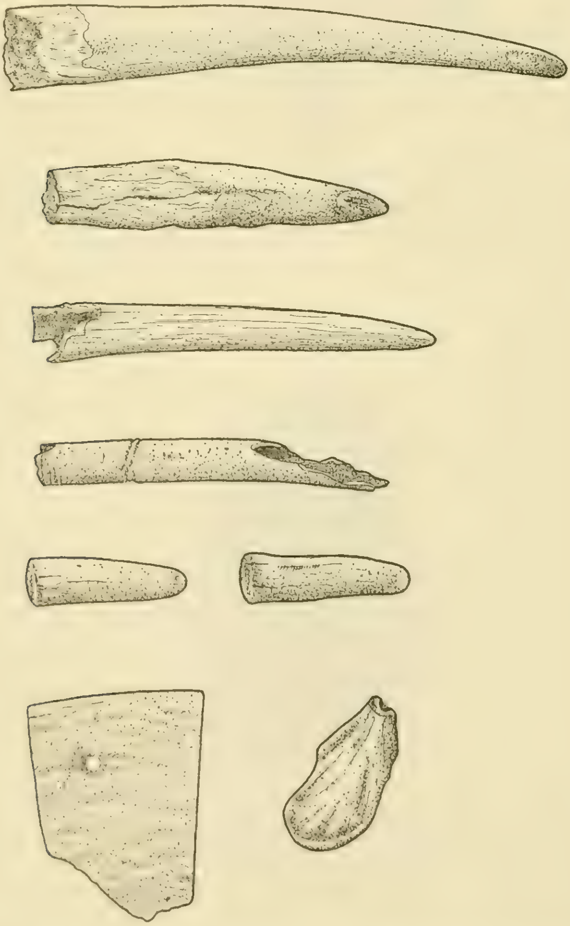

Figure 40.—Typical bone awls and punches, Clarksville site, 44Mc14.

many splinter awls, for very little modification of the bones was needed for functional completion.

Most of the animal bones were either split or broken in order for one to extract the marrow contents. Exceptions occurred in the smaller bones. Some splinters of deer, elk, and turkey bones were dressed down by grinding and subsequent rubbing and polishing. Some were terminated with blunt and dull points; others received very sharp points, all of which were determined by their intended function: use as punches or as awls. Some of the blunt-pointed tools (fig. 40) probably were used to create the various punctations found on the exteriors of vessels, in basketmaking, or in working the hides of small animals. The sharp-pointed ones (fig. 41) were probably used mostly in the sewing of leather and textile objects.

A number of these bone tools still retain the original articulate surfaces which makes the identification of the animal from which

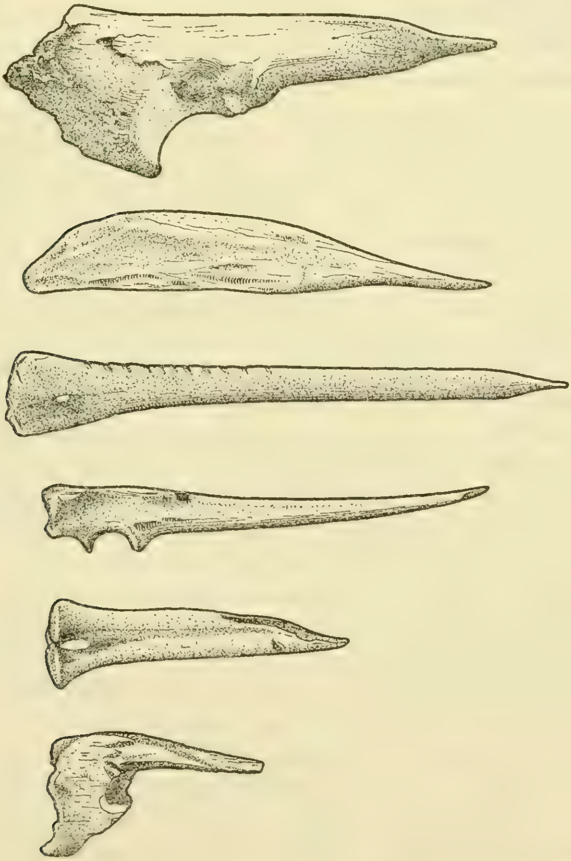

Figure 41.—Typical bone awls indicating the various bone types utilized. Clarksville site, 44Mc14.

they were derived a great deal easier. Among the various animals identified are: *Ursus americanus* (American black bear), *Castor canadensis* (beaver), *Odocoileus virginianus* (Virginia white-tailed deer), members of the Anatidae family (ducks), wapiti (elk), *Urocyon cinereoargenteus* (gray fox), fishes of various types, various types of the group Chelonia (turtle), *Meleagris gallopavo* (turkey), *Didelphis virginiana* (opossum), *Procyon lator* (raccoon), *Lepus floridanus*, and other members of the rabbit group, as well as squirrels and birds.

Bone beamers or drawshaves (fig. 42, *b*; pl. 69, *a*, *d*) were made from the metapodial bone of deer and elk; awls were made from either whole cannon bones, ulnae, or splintered bones of deer and elk, from turkey tarsometatarsi, jaw bones of garfish, large fishbones, and splintered bird bones; needles (pl. 69, *a*; *b*) were fashioned from sections of ribs of elk and deer; fleshers came from ulnae and antlers of deer (pl. 69, *a*); fishhooks were manufactured from toe bones and splinters of larger bones of deer (pl. 70, *h–k*); antlers gave flakers (pl. 69, *a*, *e*), punches, socketed points, and drifts; beads and tubes were made from the hollow bones of turkey, other birds, and possibly a number of the small mammals; perforated deer phalanges (pl. 70) were present; beaver incisors were split and used as chisels; canine teeth were pierced and used as either beads or single pendants; turtle carapaces were fashioned into spoons, dishes, rattles, and used as totemic emblems (pl. 70, *m–n*); plastron fragments were perforated as pendants (fig. 40, *g*); deer toe bones were cut, hollowed out, and pointed to serve as projectile tips (fig. 43); some awls have spatulate points (fig. 35 *c*, *d*); and the penes of raccoon and bear (fig. 35, *e*) were used as implements or showed evidence of having been used by human beings.

Bone beamers which had either worn through or broken may have been later modified into awls, punches, or used as fleshing tools. Such bones are heavier and sturdier, and only a small amount of labor would be necessary to convert the beamer sections into these tools. Splintered bone awls varied in overall length from 2.5 cm. to 16 cm.; a few were well finished but the majority still retained the sharp surfaces of the broken bone, for no attempts were made either to round off the edges or to shape the bone into a completed tool. No double-pointed awls were present.

Bone fishhooks (pl. 70, *d–f*) are of the unbarbed type. They were made either from fractured leg bone sections or from toe bones of deer by scraping until a central open space was produced, then by cutting this loop open, and finally by pointing one of the tines and encircling the other with a shallow groove to form a slight knob for the attachment of the cord. Webb and De Jarnette (1952, pl. 221–1) illustrate the progressive steps in the manufacture of fishhooks from the toe bones of deer, including all steps from the unaltered toe bone

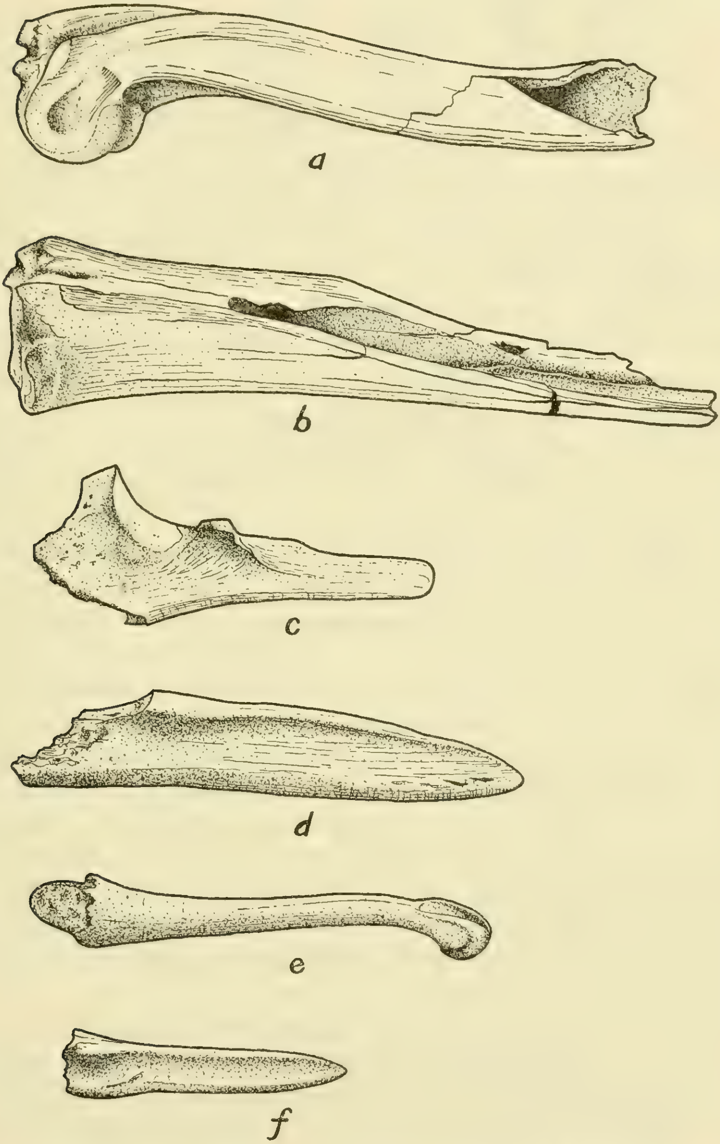

FIGURE 42.—Large and heavy bone tools utilized by the people of the Clarksville site, 44Mc14.

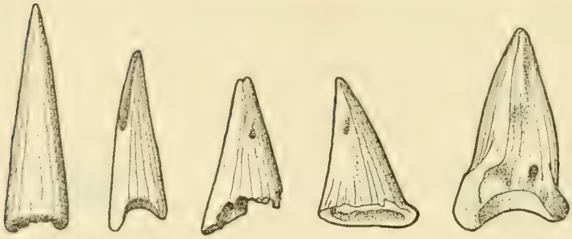

FIGURE 43.—Bone tips for projectile shafts from the Clarksville site, 44Mc14.

to the completed tool. Similar methods were utilized by the occupants of this component.

Tines of deer antler were converted into projectile heads by boring a hole in the proximal end to receive the shaft; these are rare. One complete specimen is 8 cm. long, having a central perforation which penetrates to a distance of 2.5 cm.

The carapaces of turtles were used primarily as totemic emblems. In a number of instances they were introduced into graves in true anatomical position so as not to serve as receptacles or containers. The plastron was completely removed and in most cases the ventral ends of the vertebrae were still intact. Whenever a receptacle was intended all the extruding ventral portions of the vertebrae were first removed, this surface was well smoothed, and later the side portions of the shell were smoothed by destroying the attachment surfaces of the plastron. Occasionally portions of the plastron were perforated to create a sort of pendant. In one instance the carapace had been sawed almost completely in half along the median line, stopping short a distance of one-half inch from the margin on either side. Later, the carapace had been treated with some sort of substance giving it a rich brown tint somewhat like a shiny lacquer. This particular specimen, along with an untreated carapace, was found in a grave. Both carapaces were crest uppermost and nothing was found under either of them.

Turtle plastron and carapace rattles are not common in the northeast sector but appear in Huron and neutral country in post-European sites. They are more common in the western sector than in eastern areas. Turtle-shell cups, while found in many of the Fort Ancient sites, were not reported from typical Iroquoian sites.

Bone beads were made from the hollow leg bones of turkeys and other birds as well as from small mammals. Some are short while others are long enough to be classed as tubes. Both types are exceedingly rare in this component as well as in the rest of the reservoir area.

Beads of this type are common in most Iroquoian and Fort Ancient sites.

Various bones from the wings of turkeys and the mandibles of small rodents, such as squirrels and rabbits, were perforated and strung to form one type of neck ornament (pl. 71, *e*). These dangling pendant bones formed a type of "choker" or close-fitting necklace around the neck of an adult male.

Perforated deer phalanges are common not only in the Clarksville site but in Iroquois sites as well. Flattened phalanges and those rubbed to a pyramidal shape are present almost exclusively in Iroquoian areas, particularly in the northeastern sector (Griffin, 1943, p. 234). Parker and Wintemberg have suggested that some of the worked phalangeal bones may have been used as whistles.

The incisor of the beaver, cut at the roots, was used as a chisel or scraper. Such implements also occur in Iroquoian and Fort Ancient sites as well as in many of the Woodland components. In both areas similar use was made of animal teeth, particularly those of canines, for necklaces and pendants (pl. 71, *a*).

Some awls have flattened, spatula-type points while others, which are fairly common, were made from turkey metatarsals. A few were notched along the marginal supporting bone splints extending along the hypotarsus. Split parts of turkey leg bones were not often used. The ulnae and fibulae of small mammals were shaped to form sharp-pointed awls, the heads of the bones remaining intact. Awls of the same general type were made from the bones of larger animals such as deer and elk. When a beamer broke in the central part of the shaft, the shaved ends needed only to be sharpened to provide a strong, heavy-duty awl or gouge.

Needles were made from the rib bones or small leg bones and in cross section are flat; the heads are but slightly enlarged and have circular eyes.

A single specimen of deer vertebra (pl. 68, *b*) and a human ulna (pl. 68, *a*) were pierced with small, triangular, white quartz points. The medullary cavity of the deer's vertebra was entered by the point partially severing the medulla oblongata, or spinal cord, bringing immediate paralysis to the animal which probably was soon dispatched by the Indian hunter. The right ulna of an adult male contained the tip portion of another small, triangular, white quartz point a short distance above the elbow. This is firmly lodged within the bone. Since there was no calcareous formation around the wound we can assume that the individual did not live long after receiving the wound.

SHELL ORNAMENTS

Worked shell occurred only as items of personal adornment. These include various shapes of shell beads for necklaces or attachments for clothing, and shell discoidals which were worn either around the neck or suspended from the neck, resting upon the breast, as illustrated in figure 44.

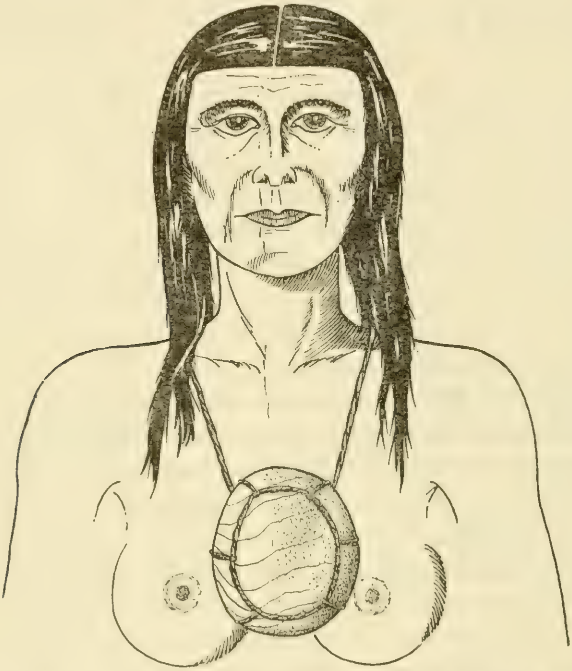

Figure 44.—Carrying arrangement of large shell gorget as worn on the chest of the individual, Clarksville site, 44Mc14.

All shells were identified by Dr. J. P. E. Morrison, of the Department of Zoology, U.S. National Museum.

The *shell beads* are of many shapes and sizes. Some are disk-shaped, others are cylindrical, others are hemispherical, while still others are barrel-shaped with either flattened or biconcave bases. The larger and heavier beads are made from the columella of large marine gastropods such as *Busycon perversum* or *Busycon contrarium* (Conrad). Smaller beads are made from sections of either *Busycon contrarium* (Conrad) or a type of *Elliptio* (?), a freshwater pearly mussel, since some of the beads are definitely mother-of-pearl.

Each individual bead constitutes merely a unit in an entire necklace, but when considered as an entity starting from a small, squared, shell blank which had to be drilled, rounded off, and then reduced in diameter and thickness to the desired size (pl. 72)—all of which entails labor and a love for adornment—one must consider the never-ending time expended to produce such objects.

To make up a necklace of shell beads ranging in diameter from 2 mm. to 3 mm., it has been found that 28 to 34 small beads are required to make an inch of necklace (pl. 62, *a*). One necklace of small beads that was recovered, measured 66 inches in length. This means that 2,244 beads had to be made and strung before this individual necklace could be worn. Haury (1931) estimated that to make a single bead it would take at least 15 minutes to drill the hole and to round off the blank into an acceptable disk-shaped bead. This is a very conservative estimate, as it does not allow for the cutting of the blanks or the time necessary to thin down the individual specimen. Using his figures, it is found that it would require a minimum of 561 hours to make this particular necklace. Reducing this to man-days (one man working a straight 8-hour day making beads), it is estimated that 70⅛ man-days are required just to make the beads for this one necklace. A dozen or more necklaces of this type were recovered from various burials in the Clarksville site (44 Mc14).

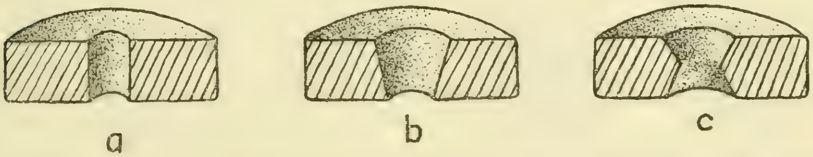

FIGURE 45.—Schematic drawing indicating types of perforations used to pierce shell blanks to create beads, Clarksville site, 44Mc14.

A large number of the smaller disk-shaped beads measured 2 mm. to 3 mm. in diameter and some ran as high as 4 mm. Perforations were gaged to allow plenty of material giving strength to each. Thickness varied from 0.75 mm. to 3.5 mm.

To determine the type of perforations used, a number of beads were cross-sectioned. These revealed three basic types (fig. 45). One is a straight tube, uniform in diameter throughout, which was made by drilling with some slender instrument from a single direction (fig. 45, *a*). A second type, a biconical perforation, gives an inverted double truncated cone effect. This type of hole was made by drilling from both sides with a fairly wide bit of some sort (fig. 45, *c*). A third type is the truncated cone that resulted when a tapering, pointed drill was used on one side of the bead blank (fig. 45, *b*).

During the excavation these small disk-shaped beads were recovered at practically every stage of manufacture: the squared blanks which have been drilled, these drilled blanks rounded off, the rough bead which has been reduced in thickness, and the bead in its final stage. Plate 72 shows the whole process.

The larger beads were perforated by drilling from both sides. They also show a variety in overall shape. In some, the height is equal to the thickness and the sides are vertical. Others are thicker on one side and thinner on the other, with vertical sides (fig. 46, *b*). In still others the sides are of equal thickness but their sides bulge slightly, giving a convex or "barrel-shaped" effect (fig. 46, *c*). The larger disk-shaped beads vary in diameter from 7 mm. to 10 mm. and are usually approximately 4 mm. in height, as illustrated in figure 46, *a* and *c*. Then, there is the wedge-shaped bead of the same diameter whose greatest height may vary from 2 mm. to 4 mm., with the tapering end varying from 1 mm. to 2 mm., as shown in figure 46, *b*.

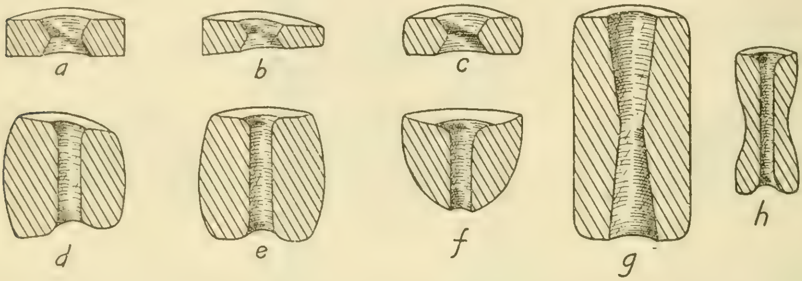

FIGURE 46.—Typological series of shell bead forms, Clarksville site, 44Mc14.

Occurring in a common necklace were two roughly barrel-shaped shell beads whose greatest thickness measured 13 mm. Both ends of each taper in the same direction, creating a foreshortened or slightly wedge-shaped effect. The minimum heights of each are 9 mm. and 10 mm. The smallest diameters, 6.5 mm. to 7 mm., occur at the ends or abutting surfaces; the maximum diameters, 9 mm. to 10 mm., occur at the center of the bead.

Associated with this same necklace were two perforated elk's teeth (pl. 73, *b*). The size of their perforations matched those of the other beads. In contrast to the dull, heavily encrusted exteriors of the shell beads, the elk's teeth still retained their high polish. This polish was marred by small patches of a black substance which had penetrated the enamel. At first, it was thought that these patches were specks of graphite, since particles of graphite were present in the site in the form of faceted nodules, but when the teeth were examined under a microscope, it was determined that these darkened areas were partly caused by a form of decomposition.

Most of the larger barrel-shaped beads (fig. 46, *e*) are round in cross section, but there are a number which are rectanguloid, being rectangular but with rounded corners. All of these vary as to size. Diameters vary from 6 mm. to 13 mm.; heights from 9 mm. to 15 mm. Other beads of this size tend to be spheroid. From the twist in the columella groove it has been determined that all of these large beads were made from *Busycon contrarium* (Conrad). A few of these beads still retain their original high polish but the majority are either partly weathered or partly covered with the usual brownish-red patina (?). It appears that that section of the bead which was in direct contact with the dead body, during the period of decomposition, underwent a certain chemical change resulting in this brownish-red covering. Under this covering lay a softer layer of shell, much softer than the rest of the shell. Other beads and those portions of beads which were free of this contact suffered none of this ill effect and hence were not altered in appearance, with the exception of color loss, a change from the bright hue of the original shell to a dull white as a result of resting in the ground.

The size of the perforation in this type of bead is very small, averaging 2 mm. Penetration is more or less straight through the entire bead with practically no constriction near the middle as though the bead were drilled from both ends. It is almost certain that a stone drill was not used to perform this task, since no drills of equal diameter were found in the entire site.

That these beads were made elsewhere and traded into this portion of the Roanoke drainage is a possibility that cannot be overlooked. If such were the case, then the beads must have come from the south, since this type of *Busycon* is native only to the Gulf of Mexico and the eastern Florida waters.

Another bead type consists of large rough sections of *Busycon* columella, 4 mm. to 33 mm. in length. All rough edges of these sections are smoothed and rounded; the central perforation was made by drilling with a long, thin drill from either end, meeting somewhere near the center of the bead. In most cases, juncture is true, but in a number of instances contact was made only after repeated drillings.

A single necklace, composed mostly of this type of bead (pl. 73, *d*; fig. 46), consists of 20 large columella sections interspersed with 23 spheroid columella beads (fig. 46, *e*). An exceedingly heavy ornament, it weighs slightly over 14 ounces.

Still another bead type (fig. 46, *f*), made from the columella of *Busycon* sp., is hemispherical or a rounded cone in outline. Diameters vary from 10 mm. to 18 mm. and heights from 7 mm. to 15 mm. The central perforation, slightly less than 2 mm. in diameter, is uniform throughout, indicating that drilling was from one surface only. Twenty such beads were found in a single necklace. Each appeared to have been hung pendant fashion from a common cord, the whole completely encircling the neck.

Sections of *Serprelid* worm tubes (marine) were present mostly in the general midden level, but a number were found in the fill of several graves. We also found instances in which sections of these tubes had been converted into crude beads.

Hundreds of marginella shells, *Prunum limatula* (Conrad), were recovered from around the necks of individuals, from wristbands, skirts or kilts, aprons, and knee bands. The overall shell was but little altered; near the base of each a hole was worn through to the central cavity which served as the means of passing the attachment to the cloth, or through which the shells were threaded individually on a necklace. These marginella are of the peculiar Virginia variety.

The only other whole shell to be utilized by these Indians of southern Virginia and northern North Carolina is *Oliva sayana* (Ravenel). These specimens are fairly uniform in length, measuring 36 mm. overall. In all instances a portion of the base had been rubbed away, making a hole for the insertion of the cord. The 10 specimens formed a necklace around the neck of one of the burials.

Shell gorgets showed a wide range in overall diameters (pl. 69). The smallest gorget, 41 mm. long by 34 mm. wide, is roughly rectangular in outline with an elliptical central perforation, 5 mm. across its widest dimension and 3 mm. across its shortest axis. The largest of the gorgets is roughly circular, measuring 142 mm. across its longest axis and 133 mm. across its shortest axis. This gorget was not perforated and apparently was suspended from the neck of an individual, as illustrated in figure 44. Supposedly, a netlike suspension hood was woven around the outside of this large shell disk so that it could be worn without being perforated. It was found lying upon the chest of one of the burials. The ornament was manufactured from one of the giant left-handed spiral Busycons, *Busycon contrarium* (Conrad).

A number of other gorgets, ranging in diameter from 75 mm. to 90 mm., were fashioned from *Busycon carica* (Gmelin), a right-handed gastropod. Some have central perforations while others lack this feature. Most have two closely spaced holes near the margin for suspension. These holes were drilled from either side. One gorget, showing a portion of one and two complete marginal holes, also had a central perforation. Radiating from this central perforation were four etched or incised lines which divided the circle into four unequal parts (pl. 69, *B*, *a*).

With the exception of the small marginella shells, shell material of the type used for ornamental purposes is scarce. Whole pits, however, were filled with shells of fresh-water mussels. Other pits were filled very compactly with the shells of the various types of snails. Whether these were steaming pits could not be determined since there was no evidence of the use of heat in any of them.

The following foreign shells were identified by Dr. Morrison:

Oliva sayana (Ravenel)
Busycon carica (Gmelin)
Busycon contrarium (Conrad)
Serprelid worm tube (?) marine

The *marginella* is a local variety identified as *Prunum limatula* (Conrad). These were used widely as ornaments or attached to various articles of clothing.

Various pockets of shells were located that contained not only *Oxytrema symmetrica* (Haldeman), *Campeloma decisum* (Say), *Oxytrema catenaria dislocata* (Reeve), but hundreds of *Elliptio complanatus* (Solander), *Campeloma rufum* (Haldeman), *Lioplax subcarinata* (Say), *Oxytrema virginica* (Gmelin), and *Mudalia carinata procissa* (Anthony), which is the heavily ridged form of *Mudalia carinata variabilis* (Lea). Incidental inclusions consist of *Triodopsis albolabris* (Say), *Haplotrema concavum* (Say), *Triodopsis fallox* (Say), *Anguispira alternata* (Say), *Mudalia carinata variabilis* (Lea), *Campeloma decisum* (Say), *Hawaiia minuscula* (Binnay), *Mesodon thyroidus* (Say), *Triodopsis albolabis* (Say), and *Mesomplinx cupreus* (Rafinesque). Many of these incidental inclusions occurred in direct association with both human and animal bones. Whether this denotes that the holes were open sufficiently long for these shell-bearing animals to creep into the holes or that they worked their way downward seeking the calcium from the bones is not known.

Many of these same shells appeared in the fill of the following midden pits: Features 2, 7, 8, 9, 23, 29, 30, 43, 53, 59, 73; in the grave fill of Burials 55, 75, and 76; as well as in the general midden layer of the 30-foot square area excavated.

OBJECTS OF STONE

Stone was not extensively used in the Clarksville site. In most instances, chiefly as hammerstones and abraders, rough natural stones were utilized which fitted the purpose at hand. Some hammerstones were pecked and shaped, having either plain surfaces, a single pit on one surface, or pits on opposing surfaces, which may have served as thumb and finger holds. Usually, a quartz, quartzite, or chert nodule, or some other type of hardhead, was used for shaping. Hammerstones vary in size and weight. Weight ranges from 4 ounces to 2 pounds 8 ounces. Some are badly battered at both ends, while others show only a single working surface.

Digging tools (pl. 77, *n*), which may have been either spades or hoes, are flat, elliptical, or roughly rectangular in outline with rounded corners. Such tools were shaped by percussion chipping from sheets of shale, limestone, slate, and other tough stones that naturally break off in flat sheets. The working edge was later altered by finer chipping or pecking, or by abrasion through constant use. Overall length varies from 10 cm. to 21 cm. None of these tools show that they were ever hafted. Probably all were held in the hand and used as the owner squatted upon his heels.

Representative specimens of planoconvex adzes (pl. 74, *a–c*) vary in overall length from 10.5 cm. to 17.5 cm. Weights vary from 5 ounces to 1 pound 4 ounces. Adzes were shaped from argillite nodules by pounding and pecking; some received a subsequent polishing. These vary from an ellipsoidal to a rectanguloidal shape tapering uniformly from the top to the cutting or working edge. Adzes are always formed so that one surface, known as the back of the adz, is flat. The opposing surface forms a gentle arc of convex appearance and is known as the belly of the tool. In most instances a wooden handle abuts the back of the blade and is attached by means of thongs. Hafts were usually fashioned from a carefully choosen crotched limb. This section was carefully altered so that when properly attached it formed either a right angle or an acute angle to the blade, depending upon the wishes of the user (fig. 47).

It is conceivable that an antler foreshaft was used.

The smallest adz head in the collection has cutting edges at both ends. The broader edge has been either worn down or made so that the left side is a trifle shorter than the right side, forming a 10-degree angle. This tool was probably made and used by some right-handed artisan, since this angle would facilitate its use. The opposite, or smaller, cutting surface forms a rounded bevel which would give a well-defined groove when properly used. Since this adz head weighs only 5 ounces it was probably used as a finishing tool rather than one to rough out the outline of a particular object.

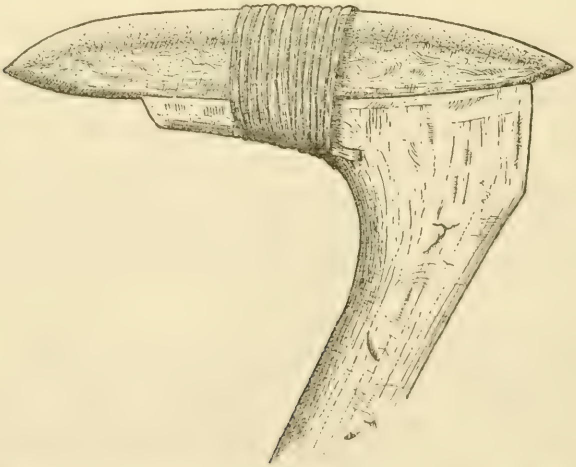

FIGURE 47.—Hafted double-bitted adz, Clarksville, site 44Mc14.

Adzes are not plentiful. In fact, they can be considered rare, for only three adzes were recovered—two from a single burial and the other from the fill of an old posthole.

Adzes have been reported from Algonquian sites in New York, particularly in the central, southern, and western sections of that State. They have also been reported in central and western Pennsylvania, as well as in sections of New Jersey, Massachusetts, Maine, Michigan, and Illinois (Willoughby, 1907, pp. 296–306).

Adzes used mostly as woodworking tools have been used as fleshing tools in dressing down raw hides. Whether the presence of these tools may infer the presence of dugout canoes and wooden dishes, such as bowls and spoons, is to be taken into consideration.

Celts, like adzes, were probably made from natural argillite nodules which resembled in a general sort of way the desired shape of celt. Celts are distinguished from adzes by their general parallel bilateral shape. Both were subjected to similar initial treatment in the formative stages. They were first roughly chipped into shape; the rough surfaces were then pecked or pounded to obliterate the high spots and to round out the tool. Additional pecking and pounding smoothed the surfaces and although polishing did not necessarily follow, a definite cutting edge was always created by grinding.

Celts are of two general shapes: oval and rectangular in cross section (pl. 74, *d–f*). The former has a more pointed poll measuring anywhere from 10 cm. to 20 cm. or more in length, while the latter has a tendency to be blunter, flatter, and usually smaller in size, measuring from 9 cm. to 17 cm. in length. Fragmentary celts, of both types, occur throughout the midden fill.

Celts were mainly woodworking tools and served as either ungrooved axes or chisels. They were also used as hide scrapers and hide dressers and could be easily converted into weapons of defense.

Celts, unlike adzes, have a wider distribution and conform to a generalized shape depending upon a definite time period. The earlier celts tend to be round in cross section and long, but become flatter and shorter during the late Woodland Period. This is not always true for there is a certain amount of "throw-back" to earlier forms during a late culture period.

Celts did not occur in the Selden Island site in Maryland (Slattery, 1946, p. 265), but they were present in both the Hughes site in Maryland (Stearns, 1940) and the Keyser site in Virginia (Manson, McCord, and Griffin, 1944). The latter sites are given to Late Woodland shell-tempered pottery, while the former is principally a steatite-tempered component of Early Woodland with a minority of sand-tempered ware.

Many sites in the Roanoke drainage of the John H. Kerr Reservoir resemble those in the vicinity of the Potomac drainage in that grooved axes are nonexistent. The celt appears to be the only type of ax utilized by these aborigines.

A single, semipolished, *biconcave discoidal*, with an outside diameter of 10 cm. and a central perforation whose diameter measures 3.5 cm., 2.7 cm. thick and weighing 16 ounces, was found. Upon one of the central concave surfaces a "turkey track or turkey foot symbol" is engraved, with the heel of the foot toward the center and the toes pointing outward. The outer rim on this surface is slightly rounded and measures 1.3 cm. in width, while the rim on the opposing surface is flat and averages 0.9 cm. in width. Slight pecking scars are still to be seen, especially upon one of the concave surfaces. This particular "chunkey stone," as such stones are called, was found lying behind the head above the left shoulder of an adult male skeleton. Interment originally placed the body upon its back, knees bent and upward, the left arm bent at the elbow and hand resting upon the abdomen, with the right arm down by its side. The weight of the grave fill shifted both the head and the knees out of their original position so that they rested upon the right side. The chunkey stone is the only one found at this site. In fact, no other specimen was found in any of the other investigated sites in the reservoir area.

In Bulletin 30 of the Bureau of American Ethnology, "Handbook of American Indians North of Mexico," the following is found regarding the game of "Chunkey":

> CHUNKEY: The name commonly used by the early traders to designate a man's game formerly popular among the Gulf tribes and probably general in the S., E. of the Mississippi. It was played with a stone disk and a pole which had a crook at one end. The disk was rolled ahead, and the object was to slide the pole after it in such a way that the disk would rest in the curve of the crook when both came to a stop. It was usually played in the larger towns upon a piece of ground regularly prepared for the purpose, called by the traders the "chunkey yard" or "chunk yard," adjoining the town square, or central plaza, in which the most important public ceremonies were performed. In the W. a somewhat similar game was played with a netted wheel and a pair of throwing sticks. The name appears to come from the Catawba or some other language of Carolina, where Lawson, in 1701, mentions it under the name *chenco*. [Mooney, 1912, p. 298.]

Cupstones or "anvil stones" are present. Usually these are flat slabs of sandstone or some other gritty stone which have one or more pits pecked on one or both sides of the stone. These pits are usually uniform in size and shape but may vary somewhat as to depth. Such stones have been called "nut stones" or "nutting stones," presumably indicating that a nut or nuts were placed in the depressions and cracked by a blow from another stone; thus allowing the meat to fall nearby and not scatter. No known use can be safely ascribed to these stones.

In a number of cases they have been termed "paint mortars," for a stain was found in some of the depressions. Whether such stones were intended by the aborigines as "nut stones," "paint stones" or "mortars," or abraders is not definitely known.

A small, crudely chipped discoidal was recovered from the fill of a midden pit. It is greenish in color, composed of a very fine-grained sandstone, and, not a true circle, measures 50 mm. at its greatest diameter. Its greatest thickness occurs at the central portion and measures 18 mm. At the outer edges it tapers to a thickness of roughly 10 mm., presenting a somewhat elliptical effect in cross section. Off-center opposing conical pits measure 9 mm. and 12 mm. in diameter with depths of 2 and 5 mm. (pl. 75, *h*).

This particular discoidal was initially shaped by percussion chipping. The outer margin was rubbed and smoothed, but only a slight amount of smoothing was expended upon the flat surfaces. A number of shallow striations occur across one of the flat surfaces. That this stone was used as a hand piece in conjunction with a bow drill set is highly probable, but this interpretation is not conclusive since we found no concrete evidence that such drill sets ever existed in this site. We do know, however, that some sort of drill or drills were used during the occupation of the site from the remains of various bored objects, such as beads, mending holes in pots, etc. We cannot postulate the various types of drills used, for not all types were preserved. Only those made of stone now remain.

Stone gorgets are noted for their rarity. A fragmentary two-hole, steatite bar gorget was found while cleaning out the fill of a midden pit (pl. 75, *d*). In cross section it is planoconvex with the flat section acting as the back or base of the gorget. On the "belly" side there is an enlargement, resembling a protruding belly, at the center. A number of incised lines radiate outward toward the margins and the holes for suspension. As they approach the suspension holes these

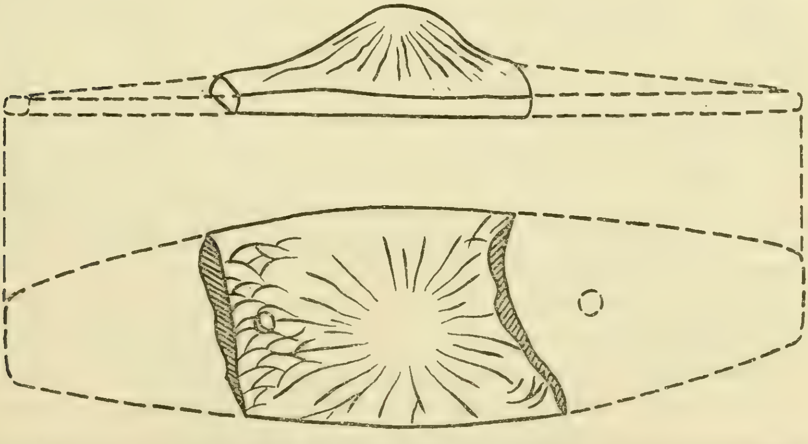

FIGURE 48.—Two-hole steatite bar gorget from Woodland Horizon, Clarksville site, 44Mc14, showing top and side views.

lines branch into what appear to be scales of some sort, roughly resembling the scales of a carp fish. All lines are shallow and very narrow as though etched into the steatite with some hard, sharply pointed tool. The apex of the belly surface is highly polished.

The back is marked with a number of shallow grooves, 5 mm. wide, running parallel to the long axis. These grooves appear to indicate that the gorget had long since been broken during aboriginal times and that this fragment was utilized as a polisher for bone awls. Other longitudinal striations occur which seem to be the result of rubbing a coarse, gritty object over the surface.

Grooved hammerstones, mauls, and club heads are rare. Only a single grooved specimen was found. This came from the upper portion of a midden pit. It shows considerable battering on one face while the rest show no alteration from the original surface. This granitic artifact, a hard tough stone, has been hammered and pecked into the general outline with a slight encircling groove near one end. It measures 9.3 cm. in length and weighs 17 ounces. It is too badly battered to be considered a club head and was probably used as a hammerstone or a crude ax.

Metates, or *milling* or *rubbing stones*, occur as flat slabs of some kind of hard gritty stone. These display slightly worn saucer-shaped central depressions which were the grinding surfaces. Usually, no attempt was made to alter the natural outline of the stone. The only modification is the slight central depression which may occur on one or both sides of the stone. From the shape of the depression, one would surmise that a rotary motion had been used in grinding. The depth and size of the depression indicate that no great amount of grinding was done by these people.

In use with these shallow metates were either disk-shaped or rectangular manos. Flat, natural-shape stones sometimes served as manos. Whichever stone was used, it had to fit the depresion of the metate closely so that contact between both surfaces could be made.

Scattered throughout the midden area were bits of ground hematite. Occasionally, larger chunks of this material were found, indicating that crude hematite was ground and the resulting powder shaped into "blocks" or "cakes" for future use. This powdered hematite probably served the same purpose as milady's rogue packets, i.e., for personal adornment. Faceted nodules of hematite and pyrolusite (MnO_2) are also present.

Along this same line there are a number of steatite nodules which have shallow saucer-shaped holes in their surfaces (pl. 75, *f*). These have been worn down either by gouging or scraping to produce a powdered talc. Whether this talc was used as a polishing agent on the various bone and stone tools or as an article of personal adornment could not be determined from the evidence at hand. Some of the steatite nodules have a pinkish cast, resembling a deposit that occurs in the upper reaches of the Roanoke River, while other nodules have a bluish cast or tint resembling a deposit in the vicinity of La Cross, Va., on the Meherrin River. In either case both deposits were easily within reach of the inhabitants of this site.

A small, thin, ovate piece of reddish sandstone bearing a slight depression upon each side near the broader end of the oval had a series of blunt indentations or serrations running down the stone toward the narrower end or tip. This stone could have served equally well as a pendant or as a potter's tool. If used as a potter's tool, a comblike effect would be the issue. Such treatments were found on either the exterior or interior surfaces of pottery vessels. This tool or pendant is shown in plate 75, *b*. Across one face of this object there are two faint parallel lines, 5 mm. apart, running down and diagonally from the vicinity of the grooves for a distance of 23 mm. Apparently this treatment was intended to be decorative.

Other thin plates of slate were worked. One fragment (pl. 75, *a*), is roughly pentagonal in outline. Two edges bear serrations. Separating these two edges is an edge which has been rubbed and smoothed. The remaining two edges are unworked. Pulling the serrated edges across a plastic clay resulted in a series of parallel indented lines resembling the combed effect found on various sherds. Whether this, too, was a potter's tool and formed part of his kit could not be determined, but it seems highly plausible since the tool has both a serrated edge and a smoothed edge; both are necessary in the manufacture of pottery vessels.

Several small, waterworn pebbles were recovered from various midden pits. All are highly polished varieties of hard stone. They vary in general outline from triangular to round. One specimen is illustrated in plate 75, *c*. It is questionable whether these pebbles were rubbing stones, serving as parts of a potter's kit, for under magnification no striations, which would have resulted from such use, were distinguishable. They are black, red, or white in color. If it can be inferred from a corresponding use of such stones in the Southwest, these stones with their colors might be fetishes denoting the various cardinal directions. The writer cannot, however, vouch for either of these interpretations of the pebbles.

Very thin flakes of polished slate (pl. 75, *g*), bearing worked edges on one of two sides, may have served as hide dressers or as pottery smoothers, but these are scarce. We find that slate occurs mostly as unworked plates or chips. From evidence found in this site and from others within the reservoir basin, it seems that slate was used principally in the manufacture of gorgets of the bar type.

Many flakes of chert, rhyolite, quartz, and quartzite, together with broken bits of sandstone, were found in several of the midden pits.

The former constitute the wastage resulting from fashioning stone tools of these various types of stone, while the latter are all unworked particles.

At the foot of the burial area of burial No. 77 was found a crude line of large granitic rocks which were definitely associated with this burial. This use of stone is not only rare but unique. Whether these stones had some esoteric significance could not be determined, for no other instance of a similar use of stones was found. Since there was no contact between the stones and the human remains they definitely were not placed upon the grave as a marker or to keep predatory creatures from the grave. This is a single cultural trait for which no explanation could be found.

Also found were large chunks of stone, arranged in either circular, pentagonal, square, or triangular form with the long axes of the stones pointing downward (pl. 76, *b*, Feature 32). We called these features "wells" for want of a better term. These rocks were placed upon others which extended downward to the water table, and in a number of instances, extended well into the water-bearing deposit. The openings between these stones measured roughly one foot.

Now, the question arises: Why should these people have to dig wells when the river was only 50 feet or less away? Were these wells in use during a drought? Surely the Indians were not particular about the water being clear and free of silt. Again, we have an enigma.

These features were found scattered fairly uniformly over the area that was investigated. In no instance were there any artifacts or midden found within the throats of any of these features. Fill always consisted of clean sand. Whether these can truly be termed "wells" where drinking water was easily obtainable is highly questionable. Considering the difficulties involved—locating the various large blocks of granitic rocks, lugging them back to this village, digging holes large and deep enough, inserting the rocks into position, and replacing the sandy soil around them without filling in the opening—when water could be had by walking just a short distance to the river's edge, it just does not make sense that an Indian would go to such trouble. Still the question arises—what function did such features perform?

A number of fairly large *fire basins* (pl. 76, Feature 50) were found choked with broken stones mixed with powdered charcoal. Most of these features were found 14 inches below the present surface yet high in the overall midden. They averaged around 30 inches in diameter and were basin-shaped in cross section. One hundred and eighty-seven broken stones were counted from one of these basins. The broken stone-charcoal mixture rested upon a compact layer of white wood ash, yet we found no sherds, animal bones, or the usual midden scattered in the fill.

Fragments of *sheet mica*, some as wide as the palm of one's hand, were found not only in the village midden but as a part of various midden fills. None showed any evidence of having been cut or shaped, nor were there holes for attachments. Mica never occurred in association with burials nor was it ever found in grave fills.

CHIPPED STONE

Chipped stone objects were manufactured principally from chert, argillite, quartz, and quartzite (pl. 77). Some are crudely fashioned but others display very fine chipping, demonstrating a mastery of the medium from which they were made. We found that both the large, crudely chipped and the smaller, flaked projectile points are present. The cruder, larger chert points were usually found in the lowest levels of the midden while the smaller, finer, thinner, isosceles forms of quartz and quartzite, were derived from the uppermost level. There was a slight commingling of these types in the upper middle layers of the midden as well as with certain burials. Among the chert forms are the lanceolot, stemmed, and large triangular varieties. A number of these are illustrated in plate 64, *a–h*.

The stemmed variety includes the corner-notched, parallel-stemmed, either the straight- or concave-based types (pl. 64, *h*), and the side-notched straight- or slightly concave-based varieties (pl. 64, *k*). At no time in the occupation of this site were projectile points numerous.

From our study of the recovered specimens, it appears that the steps taken in the manufacture of points consisted of the following: first a spall or large flake, in the chert and argillite forms, was struck from a core. This was utilized as the basis for the projectile point, as is evidenced by the bulb of percussion still present on one surface of the point. After the point was roughed into shape by percussion, pressure flaking was used to even the edges and to give the point a sharper, keener edge.

Usually, the argillite forms are long, slender, and thick in cross section. Similar forms have been termed "fish spears" in earlier reports. Chipping is crude and only the very necessary strokes were used to fashion the crude stone into the desired tool. This is best shown in the form illustrated in plate 64, *j*, *l*, while *d* shows a much finer tool created a further retouching of the edges. Whether *l* was intended as a "fish spear" or a knife cannot be determined. Bases are roughly fashioned and rounded as shown in *b*, *g*, *h*, *i*, *n*, and *o*. Somewhat resembling this same shape are two quartz examples illustrated in plate 77, *a* and *d*. In plate 77, *b* is a fine example of a quartz knife in which the cutting blade is convex while the back of the knife is nearly flat.

Early Woodland forms are represented in plate 64, *h–p*, and in plate 77, *a–h*. Late Woodland forms still within the prehistoric horizon are the various isosceles points illustrated in these two plates (pls. 64, *u–x*; 77, *i–l*). Sizes are varied and it will be noted that a few have serrated edges.

Finely chipped chert drills were made from fortuitous chips which were altered sufficiently to fit the type of drill desired. The specimens illustrated can be assigned to the winged drill type (pl. 64, *q–t*).

COPPER OBJECTS

The only metal objects found occurred as rolled, tubular copper beads. Each was fashioned from a small, thin sheet of copper which was rolled into a tubular form. These beads varied in length but their diameter remained roughly constant. The longest measured 52 mm. while the shortest measured 6 mm. A number of these were found around the necks of various individuals. There was a young female adult who wore an interesting copper necklace composed of tubular beads of varying lengths. As the necklace was uncovered the beads appeared to have been strung on individual cords which in turn were attached to a common cord which was hung around the neck. Each bead dangled pendant fashion from this common cord, as shown in figure 49. A number of large shell disks and a couple of small shell bead necklaces also surrounded the neck of this individual.

Copper was used exclusively for ornamentation. This use of copper has certain sociopolitical implications, for only a few individuals were the bearers of copper beads.

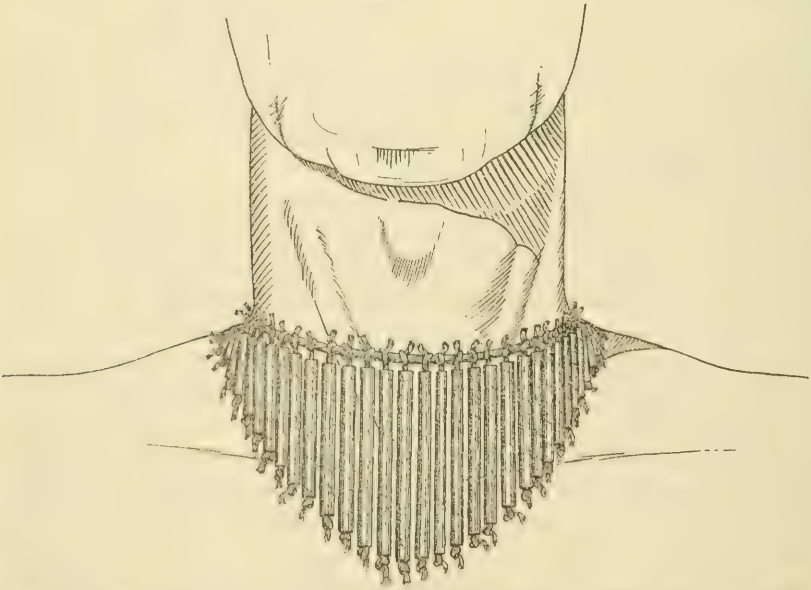

FIGURE 49.—Arrangement of tubular copper beads as suspended on cord around neck of individual, Clarksville site, 44Mc14.

Usually, whenever copper is found in prehistoric associations, it is immediately attributed to the Great Lakes deposits, but Rickard (1934, pp. 269–270) questions this. He indicates that many of the early settlers, tradesmen, and travelers noted the presence of raw copper pure enough to be hammered into sheets and utilized by the local Indians.

> Strachey, it will be recalled, refers to the "highland to the westward" and to the "hills of the northwest" as the source of copper. This is entirely in accord with the results of modern exploration, and of actual mining operations in later days. I cannot do better than quote Walter H. Weed, formerly of the United States Geological Survey. "I have found native copper at a number of localities in Virginia and North Carolina. In the Blue Ridge country it has been found at certainly a dozen or more localities, as reported by authentic observers. I myself have seen it in masses large enough to be worked into Indian implements at High Knob, near Lindon, Virginia, and in pieces weighing a quarter of a pound or more from the flanks of the Blue Ridge, west of Barbersville, Virginia. I also have native copper from surface croppings in Person and Rowan counties, North Carolina, and Fairfax county, Virginia. All of this material is perfectly pure copper, free from sulphides or other impurities, and soft and malleable. There have been a number of copper excitements through the South, and at such times the country people have prospected the hillsides and gathered great quantities of native copper specimens, which have been taken home and may be found in many cabins in the Blue Ridge country. I have known of the supposition that the Virginia Indians, and, in fact, the Indians of the Atlantic States generally, derived their copper from the Lake Superior region. Inasmuch, however, as native copper can be found at all the locations I have noted, and at many others, I have no doubt that the Indians discovered its presence in the early days. At some of the ledges (lodes or veins) which I have seen, the native copper stands out prominently upon the surface of the rock and one can hardly fail to observe it. The largest mass which I have seen in place weighed perhaps a pound. [Rickard, 1934, pp. 269–270.]

Langley (1917, pp. 67–68) has indicated that native copper does occur in the vicinity of Virginia, though not occurring in quantity.

> The copper occurs in the metallic state as small grains and small irregular areas in the highly silicified and epidotized areas or zones in the country rock. The native copper so far as noted is confined to areas of epidote, and in most instances, in quartz stringers and areas in the epidotized schists, suggesting that the solutions which produced the alterations in the country rock also brought in the copper. . . . It is known that minerals, even silicates, rich in ferrous iron may, under certain conditions, reduce copper in solution to the metallic state.

The findings of these two men give a completely new slant to the trait of copper in Indian sites in Virginia and the surrounding States. Since metallic copper does not appear in large quantities one can see why the Virginia Indians never fashioned utilitarian objects from it. As in our own culture, whenever rare metals were put to use it was always in some form of jewelry or personal adornment.

Unlike the Indians in the immediate vicinity of Lake Superior, who, living near the source of large quantities of pure copper, made it into utilitarian implements as well as ornaments, the Indians of southern Virginia could convert this metal only into jewelry.

> The nearer the source of copper, the greater, therefore, the supply, the more of it was used for implemental purposes, whereas, the greater the distance from the source and the smaller the supply available the more it was used for ornaments. [Rickard, 1934, pp. 274.]

BURIALS

The village soil was so low in humic content that the site had to be taken down to the water table, some 6 feet under the present surface, to insure that the entire cultural evidence had been removed and no early traces overlooked. In so doing, we ran across a number of deeply buried graves whose outlines were so indefinite and poor that they were hard to determine, nor could we pick up traces of them in vertical slicing. The sandy soil surrounding the grave and the fill within the grave blended so completely that we were never sure that we would find the skeletal remains until we made actual contact with the bones. Sometimes after the skeletal remains were removed and the area carefully searched we were able to make out the very dim outline of the bottom of the grave, for occasionally there were breaks in the thin silty-clay layers indicating some former disturbance.

Relatively speaking, the humic content of the upper 2 feet of the site was higher than that in the remaining lower sections. Even so it was most difficult, if not next to impossible, to trace the origin of most pits. Exceptions occurred whenever we came across a pit completely filled with discarded mussel or periwinkle shells. All of these originated at a depth of 1 foot under the present surface and in some places a foot beneath the plow zone.

The ritual of placement of the body, whether flexed or extended, is the determining factor which distinguishes the cultural affiliation of the individual. The depth from the surface to the bottom of the grave cannot be relied upon as a time factor, since the latest graves were found to be the deepest in the entire site. Many of the graves contained only a single flexed or extended burial. Others contained two or more occupants. The earlier burials were flexed while the later ones tended to be extended. Flexing seems to be quite prevalent during Late Archaic, Early Woodland, and early Middle Woodland periods. Subsequently the burial ritual was changed and interment customs demanded that the body be placed extended or partially extended. The placement of offerings was optional. Only rarely at this site did we recover offerings from the graves.

Many a carapace of the box turtle was found in the graves in its natural position, rather than inverted as a receptacle. These placements occurred far too often to be accidental. This trait has been interpreted, in this study, as the totemic emblem of the clan to which the individual belonged. This is believed to be the only instance, to the writer's knowledge, in which positive identification of the clan is made manifest through grave furniture. The totemic animal is generally regarded as both guide and benefactor to members of its clan.

While investigating this portion of the site, 78 burials were uncovered. Of this number 46 were semiflexed, 18 were extended, 9 were flexed, and 5 were disturbed. We were able to distinguish 26 males and 19 females; 33 either were small babies or adolescent children or were so fragmentary that we could not determine their sex. (See Appendix.)

Most burials lacked grave goods but in a number we found shell beads, shell gorgets, copper beads, turtle carapaces, celts, adzes, stone and clay pipes, projectile points, stone disks, clay vessels, and a few animal bones, some of which had been converted into tools.

Head direction, in the greatest number of instances, was toward the south-southeast. The remainder pointed in 14 different directions: 10 pointed to the east; 8 pointed to the west; 7 to the north-northwest; 6 to the north-northeast; 5 to the northwest; 3 each to the east-northeast, to the north, and west-northwest; 2 each to the south, west-southwest, and south southwest; and 1 each to the northeast, southeast, and east-southeast. The remaining 15 had been disturbed by the former occupants of the village so that head direction could only be supposed.

For further information, those burials containing artifacts are listed in the order in which they were recorded:

Burial No. 1.—This is the burial of a small infant which lay flexed in what appeared to be an oval pit, 2.8 feet in length by 1.1 foot in width. The pit originated at a depth of 1.9 feet under the present surface. The body lay on its left side with its head pointing to the north. All bones were badly decomposed. Placed mouth upward in front of the face was a small conoidal-based earthen bowl, which at the time of finding was filled with the same colored sand that surrounded the skeletal remains. Supposedly it originally held either water or foodstuffs as an offering to the dead.

Burials Nos. 4 and 5.—This was the first of the double burials to be uncovered. The grave contained the skeletal remains of a male, age 45–55 (burial No. 4) and that of a small child (burial No. 5). The male was semiflexed and lying on his left side while the child was flexed and lying on its back. The child's legs had been pushed out of their original placement and now rested toward the right of the body. Around the neck and wrists of the child were a number of small shell disk beads. The knees and feet of the male rested upon large flat slabs of unworked sandstone, and a bone awl had been placed near the waist.

Burial No. 6.—A flexed male, age 25–30, whose head pointed almost directly south, lay in what appeared to be an oval grave 3.6 feet long by 1.5 feet wide. The grave originated at a depth of 2.7 feet from the present surface. Associated with this skeleton was a necklace of small disk-shaped shell beads.

Burial No. 7.—This is a flexed male, age 45–50, lying in an oval grave 3.8 feet in length and 1.6 feet in width; the origin of the grave was found at a depth of 2.0 feet and its depth was measured at 3.3 feet. Around his neck were the remains of a shell necklace from which was suspended an unperforated shell disk.

Burial No. 8.—This burial, apparently a person of some importance, was that of a young female between the ages of 17 and 20. She was placed extended in the grave and was accompanied by elaborate articles of dress. Next to her left ear was a small, almost miniature, clay bowl which rested upon its base with the mouth opening upward. Around her neck was a copper necklace (fig. 49), together with a number of necklaces composed of small disk-shaped shell beads, as well as a number of large shell disk gorgets. Most of the shell gorgets had double perforations near the margin for suspension and a number had central perforations as well. One of the gorgets was inscribed with a crude cross. On her wrists, extending halfway up to her elbows, were what appeared to be wrist bands which had been completely covered with pierced marginella shells; around her hips was what might be termed a short skirt or kilt embroidered with pierced marginella shells. There was a reddish color around the head portion as though hematite had been powdered and sprinkled on her hair.

Burial No. 11.—In an oval grave 2.9 feet long by 1.7 feet wide was the extended skeleton of a very small child. The grave was first located 2.0 feet from the present surface. A 2-inch ball of unfired grayish clay was found lying against the child's left elbow. Upon exposure to the air the ball quickly crumbled into a fine sand.

Burial No. 14.—The semiflexed burial of an adult male (pl. 78, *b*) was located in an oval grave whose outlines so nearly blended with the surrounding sand that grave dimensions could not be taken with any degree of certainty. Around his neck at the time of burial must have been a cord of some sort from which four disk-shaped shell beads were suspended.

Burial No. 15.—About 40 inches below the present surface we found a small paved area composed of nine large flat stones. Immediately beneath the pavement, touching one of the stones, were the partial remains of an adolescent. Its head was to the northwest. We found no grave goods actually associated with these remains but in the surrounding fill we found a fragmentary bone fishhook.

Burial No. 16.—At a depth of 2.5 feet lay the remains of a small child in a grave which measured 2.4 feet in length and 1.5 feet in width. It was semiflexed and lying on its back, knees bent and to the right with head pointing to the north-northwest. Around its neck and intruding into the cranial cavity were a number of small disk-shaped shell beads.

Burial No. 18.—The extended remains of an infant lay in a small oval grave 1.7 feet by 1.2 feet. The top of the grave was 1.3 feet from the present surface. Above the left shoulder was a small textile-impressed earthen bowl with the mouth facing upward.

Burial No. 20.—Alongside the right side of a semiflexed mature male lay a bone awl made from a splinter of deer bone. The skeleton lay in an oval grave approximately 4.2 feet long by 2.1 feet wide at a depth of 1.4 feet from the present surface.

Burial No. 21.—A very fine chunkey stone bearing upon one of its concave surfaces the engraved imprint of a "turkey track" was found to the left of the head of an adult male. Due to post mortem shifting the head position was shifted to the right while the skeleton itself lay in a semiflexed position on its back. This was one of the better preserved skeletons. The grave was 53 inches long. Its width could not be determined, but we could trace the outlines of the grave to within 28 inches of the present surface.

Burials Nos. 22 and 23.—This is another of the many multiple burials. The semiflexed skeleton of an adult female (burial No. 22) lay in a common grave with the extended remains of an infant (burial No. 23). The female was originally placed on her back with her arms by her sides and her knees drawn up towards her chest. The weight of the grave fill had subsequently forced her lower extremities out of position downward and to the right. Above the right shoulder of the child law a turtle carapace which, because it was crest uppermost, could not have been used as a receptacle. This was probably the totem symbol of their clan. Both skeletons were fairly well preserved.

Burial No. 29.—In a fairly well-defined oval grave, oriented south-southeast by north-northwest, whose greatest diameter measured 44″, lay the semiflexed remains of a female, aged 26–30, whose head lay to the south-southeast. This was an especially deep grave. We picked up the first indications at a depth of 58 inches beneath the surface and traced it downward for another 1.9 feet. Associated with the burial were a number of disk-shaped shell beads and a few tubular copper beads, as well as two well-made planoconvex stone adzes. One of these adzes lay adjacent to the right of her jaw with the pit portion resting upon the right clavicle, while the other was adjacent to the inside of the left arm and lying on the upper left portion of her rib case.

Burial No. 30.—Associated with a poorly preserved adolescent skeleton, in an oval grave 31 inches in its longest diameter, was a bone awl alongside the lower portion of the left humerus. The grave had its origin under a 6-inch layer of sterile river-deposited sand which lay 54 inches below the ground level.

Burial No. 31.—From a small oval grave, whose greatest diameter measured in the vicinity of 12 inches, came the remains of a number of milk teeth of a very young child. Below these, and in the normal position of the neck, were found a number of large columella beads.

Burial No. 33.—The closely flexed skeleton of a mature male lay in a small oval grave 41 inches across its longest axis. Under its left scapula was a crude anvil stone made from a sandstone slab. Whether this was intentionally introduced into the grave prior to the interment or was intended as part of the burial could not be determined. The head of the skeleton was to the west-southwest.

Burial No. 34.—Associated with the right hand of a semiflexed mature male skeleton was a nondescript fired clay object (pl. 64, *a*). It is dark gray on the exterior and almost black in the interior. From its shape one would surmise that it could not have had any useful function. It appears to be a bit of clay that had been played with and was finally cast into a nearby open fire which changed its physical characteristics. Whether this object, and similar objects found scattered throughout the midden, had any cultural function is unknown. It may have been accidently introduced into the grave along with the grave fill.

Burial No. 35.—This was the remains of a mature male, semiflexed, and lying on its back with head to the west. After the burial a midden pit was dug which encroached upon the grave. The cranium and both axis and atlas and one-half of the mandible were removed at that time. The rest of the skeleton was unmolested. In uncovering these partial remains we found the remains of an olivella shell necklace around what remained of the neck. In the region of the right groin was a carapace of *Terrepene carolina* with its crest uppermost. It was filled with a dark soil containing half a bone bead, a deer cannon bone awl, and a large chip of green chert. Slightly down from the left groin and on the upper portion of the left thigh was placed another carapace of *Terrepene carolina* whose crest was also uppermost. Inside this carapace was a light-colored sand and a badly eroded *Elliptio complanatus* Solander. To the left of the first carapace and above the second were the thigh bones of a dog. Beneath these thigh bones was a section of a bird bone from which a portion had been cut. Around and on top of the first carapace were eight projectile points, six of quartz and two of chert; to the left were a natural rounded rock and a large chip of chert. Around both wrists of the individual were additional olivella beads as well as some disk-shaped shell beads. Adjacent to the disk-shaped beads were two elk milk teeth pendants (identified by Dr. D. H. Johnson, Department of Zoology, U.S. National Museum). In contrast to the thickly coated disk-shaped beads, the elk teeth showed very little of this deposit and were untouched by decomposition. There were certain black spots which had penetrated the surface of the enamel and were sufficiently deep so that they could not be removed without injuring the outer surface of the teeth. This alteration was queer, for no other teeth encountered, whether animal or human, bore such spots. To the writer's knowledge, this is the first and only instance of the use of elk teeth by the Indians of Virginia either as pendants or beads. Parker (1920, pl. 23, p. 95) illustrates a shell necklace from New York State which has a number of elk teeth as pendants.

Burial No. 36.—The following objects constituted the grave goods of a semiflexed adult male: Spaced above his head on the same plane were three stone celts and a bone splinter awl. Abutting at a right angle from the right ramus of his mandible was the butt end of a steatite pipestem with the bowl portion away from the face. This pipe (pl. 62), of a bluish-black color, is very highly polished. The celts were carefully shaped but none were polished except for the working edge along the blade. The skeleton, very poorly preserved, was placed so that the head pointed to the south-southeast. Measuring 41 inches at its longest diameter, the top of the grave was, as far as we could determine, 70 inches below the surface. This depth does not necessarily indicate its original beginning; as we pointed out earlier, both the grave fill and the surrounding sandy soil blended so perfectly that we could not distinguish between them. Possibly the top of the grave came within a foot of the present surface when it was dug.

Burial No. 39.—Another much dressed-up female, age 25–30 (pl. 79, *b*), was buried extended in a grave which terminated 5.2 feet beneath the surface. The maximum length of the grave measured 6.3 feet with a width of 2.1 feet. Its point of origin was picked up shortly after the present humus and plowed zone were removed.

The skeleton was well preserved. Above the head at a distance of 0.3 feet lay a necklace composed of various bones from the wings of turkeys and the mandibles of small rodents which could be either cottontails or squirrels. Upon her chest was an extremely large and heavy saucer-shaped shell gorget made from *Busycon contrarium* (Conrad). It had no perforations whatsoever and its possible suspension has been described elsewhere (see also fig. 44). Around both wrists were rows of small shell beads and around her neck were two short necklaces composed of sections of marine worm tubes with an imperforated shell disk made from a section of *Busycon carica* (Gmelin).

This burial resembles burial No. 3, mound 25, of the Hopewell group, in which each had a large saucer-shaped shell gorget in addition to numerous shells surrounding the forearms (Shetrone, 1926, p. 63).

Burial No. 43.—Associated with the poorly preserved skeleton of a very small child were a few disk-shaped shell beads found beneath the chin portion of the skull. The child was introduced extended and on its back into the oval grave.

Burial No. 44.—This is a female, age 19–20, which lay flexed at the base of an oval-shaped midden pit. She lay on her left side with arms bent and one hand in front of her face. Knees were closely flexed. Beneath the chest cavity were the sternum, various long bones, and other bones of a turkey. A crushed, sand-tempered, carinated bowl lay beside her feet.

Burial No. 46.—This grave held the remains of a mature female, flexed and lying on her right side with head pointing to the south-southeast. The bones were very soft and spongy and crumbled shortly after exposure. Measuring 42 inches across its longest axis, like most of the others this grave was oval in outline. It originated shortly under the humus-plowed zone and extended downward to a depth of 42 inches.

Between the areas of the chin and the top of the chest were the remains of a *Busycon* sp. gorget or pendant which bore a number of black markings. Before any photographs or drawings could be made it was destroyed by one of the many visitors to the site who slipped under the barrier.

Burial No. 48.—Lying on its back with knees up and to the right and with head to the west was the position of an adult male skeleton. Preservation was poor. The oval-shaped grave was filled with heavy midden material. To the rear and touching the skull was a crude chert projectile point whose base pointed toward the foot of the grave while the tip slanted upward. Whether this projectile point had been shot into the man's scalp or was introduced into the grave along with the rest of the midden could not be determined, since there was no scar on the skull which would indicate that the man remained alive after receiving the point under his scalp. On the same plane not far from the projectile point was a crude chert scraper which had been part of the midden fill. A number of fire-broken stones lay in the vicinity of the skull.

Burial No. 51.—Buried in the upper portion of a large midden pit were the poorly preserved remains of an adult female. She was flexed and placed on her left side with head pointing to the east. Accompanying the skeleton were a number of hardheads, both complete and broken.

Burial No. 52.—Associated with a flexed adult male was a turtle carapace lying in front of the face (pl. 78, *a*). The open side was down and there was nothing either inside the carapace or beneath it. At the foot of the oval grave, which was at a depth of 3.3 feet, there was a small hole 0.4 foot in diameter which extended downward another 0.9

foot. Although it resembles a post hole, we must designate its purpose and function unknown. Presumably, this small hole was dug at the same time as the grave.

A similar hole was found at the bottom of Burial No. 58. This time the feature occurred between the outstretched arms and in front of the belly region. Since the holes did not appear in the same position in the two graves, we may assume that this was just some erratic practice not conforming to the general cultural picture.

We carefully investigated each of these holes but found only clean sand in each.

Burial No. 53.—This burial is that of a female, age 20–24, who was buried lying on her back, arms bent at the elbows and hands resting together at the base of the neck. The thighs were extended but the knees were bent so that the lower portion of the legs lay beneath the thighs, and the buttock region rested upon the inturned feet. The grave was filled with village midden material. Alongside the upper right arm was a splinter awl. In direct association with the skeleton were a number of snail shells, *Triodopsis albolabris* (Say). These animals probably worked their way into the grave to feast upon the calcium of the human bones. Dr. Morrison, of the U.S. National Museum, informed the writer that these snails are not carnivorous and hence would not feed upon decaying flesh. Miscellaneous objects were found scattered throughout the grave fill. The human bones were in poor condition. The presence of the snails seems to indicate that the grave was partially filled, thus allowing the snails to gain access easily to the partially exposed bones. Later the grave received its complete fill as the midden accumulated over it.

Burial No. 55.—Again we found *Triodopsis albolabris* (Say) remains in direct association with the bones of a flexed adult female. She was resting upon her back, a hand on each shoulder, and knees bent over and to the left. The grave was filled with fairly clean sand and there were no grave offerings present.

Burial No. 56.—A necklace of small disk-shaped shell beads, together with similar beads covering the area from the wrists halfway up to the elbow indicating shell-covered wrist bands, a bone awl, some red paint to the left of the neck, a stone drill on the right side of the neck, a necklace made from the perforated canines of a carnivorous animal, and a number of unperforated carnivore canines formed the burial accouterments of a young male. The body was extended, with hands at its side and the head to the south end of the grave. The base of the grave was 4.0 feet beneath the present surface. Although the bones were badly disintegrated, the epiphyses indicated the approximate age of 16 years.

Burial No. 57.—An exceedingly large turtle carapace, 1.0 foot long by 0.7 foot wide, lay in front of the face of a badly decomposed semiflexed male lying on his right side with head pointing toward the east. The carapace was in the same state of decomposition as the bones so that we were unable to salvage it. The crest of the carapace was uppermost and evidently nothing had been placed under it, for it was smashed almost flat. We searched the area under the carapace and found only sterile sand.

Burial No. 61.—A miniature clay dipper (pl. 58, *c*) was found with an infant's skeleton. The skeleton was extended as was usual for very small children. Its head was in a north-northwesterly direction. Afforded ideal drainage because this burial occurred well up in the midden layer, the bones were in surprisingly good condition.

Burial No. 64.—In close proximity to a semiflexed adult male skeleton lay a large turtle carapace, smaller than the one located with burial No. 57. The carapace, resting upon its natural base, lay in the angle formed by the right thigh and the right side. Nothing was found beneath the shell. The man's body was placed on its back and when found the legs were bent and twisted to the right.

Burial No. 65.—A small conoidal-based clay olla which was tilted on its side and filled with darkened sand was found near the left hip of the extended skeleton of a child age 6–8 (pl. 79, *a*). One-fourth of the rim of the olla was missing. A hunt for this missing portion was made through the grave but it was not found. This indicates that the Indians made use of incomplete clay vessels as part of burial offerings. Grave fill consisted of a dark brownish-colored sand.

Burial No. 67.—Associated with the badly scattered remains of an infant were five good-sized waterworn stones, the butt end of a stone celt, a typical chert Woodland-based projectile point, and a badly decayed turtle carapace. These were all found in an area 3.2 feet long by 2.0 feet wide at a depth of 3.3 feet, well beneath any cultural deposit. This disorderly assortment was encountered unexpectedly, since there were no indications that anything lay there. The few infant bones that were present were only faintly indicated; hence they could not be saved for study purposes.

Burial No. 68.—Not far from burial No. 67 and on the same plane were the fragmentary remains of another infant. Its bones were badly decomposed but appeared to be in anatomical order. Above and to the left of the head was a crude disk-shaped greenstone bearing slight depressions or indentations on each side (pl. 75, *h*). It is thought that this object was a handstone used with bow drills, hence the centrally placed depressions.

Burial No. 73.—This burial contained the only evidence of an instance of violence among the inhabitants of this prehistoric village. Here we found the tip portion of a quartz projectile point embedded in the basal portion of the right humerus just above the elbow region. The point penetrated the bone slightly over 3/16 of an inch.

This young man of about 25 years must have died shortly after receiving this wound, for there was no bony growth around the point of entrance. Had he lived any length of time after receiving the wound, such a growth would have been built up around the projectile point.

A clay pipe was found resting upon the bridge of the nose. The outer lip of the stem rested upon the bridge and paralleled the nose so that the pipe bowl came almost to the tip of the nose. This elbow pipe was dark brown in color and contained a portion of the dottle.

The head of the skeleton rested upon a fairly angular broken quartz cobblestone, a most unusual headrest for a skeleton.

Burial No. 75.—This grave was occupied by a badly decomposed male skeleton, age 25–35. With the few remaining bone fragments and where bone once was, we found quite a number of different snail shells: *Triodopsis albolabris* (Say), *Mesomplinx cupreus* (Rafinesque), *Mesodon thyrosdus* (Say), *Haplotrema conarium* (Say), *Triodopsis fallox* (Say), *Anguispia alternata* (Say), and *Hawaiia minuscula* (*Binnay*). We cannot explain their presence, for they were not found in the grave fill. Since they do occur where the human bones once were, they apparently fed for calcium on bones rather than for other substances from the fleshy tissues.

Burial No. 76.—The same grouping of snail shells was found in conjunction with the poorly preserved adult male remains of this grave. This was the deepest grave in the site. The skeletal remains were partially within the water zone. It is inconceivable that any group of snails could detect a body so deeply buried, that they could work their way through a dry sandy soil to this depth, and that they could maneuver so as to feed upon the bony substance. Therefore, the grave, with its extended occupant, must have been open long enough for the flesh to become mellow, thus exposing some of the bones which attracted the snails. Presumably, after the snails entered, the grave was completely filled, trapping them in position.

Just above the right shoulder were a number of serrate-edged projectile points, all pointing in the same direction and bunched so that some were lying upon each other. We conjectured that these points were once hafted and somehow attached to the upper arm to indicate a badge of office (fig. 50), or that a sheaf of arrows was placed in this position when the body was introduced into the grave. Five of these points are made of quartz while the other two were fashioned from chert. All are almost identical as to size, shape, and chipping. That none of the edges appear to show any wear suggests that these particular points were either made for this occasion, indicating a ceremonial burial, or were objects of personal adornment.

Around and near the body were a number of broken quartz and chert stones. These were intentionally inserted into the grave along

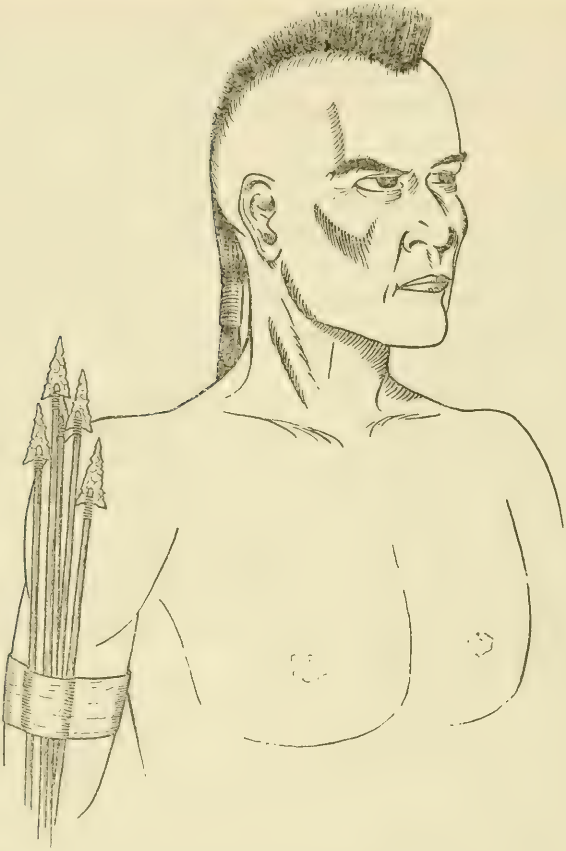

FIGURE 50.—Manner in which sheaf of arrows was worn bound to upper arm of a man Clarksville site, 44Mc14.

with the body, for there was no midden material within the grave or in the grave fill. Grave fill consisted entirely of a very light grayish-colored sand.

Burial No. 77.—In the southeast corner of our 30-foot square (pl. 80), we found a grave which did not conform to the general overall pattern. Within this grave was a flexed burial but at the foot of the burial area we found a crude limestone wall about 0.8 foot high and a little over 4 feet long. The wall was made by placing a number of limestone slabs upright at intervals in the sand. No two stones actually touched. An additional squarish limestone slab lay horizontally near the feet of the skeleton. This was the most unusual use of stone and the only example of this type found in any site within the reservoir basin.

Burial No. 78.—In a deep, oval grave the body had completely disintegrated, leaving behind a *Busycon* sp. columella bead necklace which was badly oxidized, and two badly disintegrated *Busycon* sp. discoidals, one of which was centrally perforated. From the size of the grave we surmised that the body had been flexed. Sex, age, and position are unknown.

From this mass of data we learned that there was no class distinction as revealed by burial customs. There is a distinction as to time interval in that the flexed burials appear to be earlier than those extended. None received special grave construction nor were there any specially made objects inserted with the burials. We did find possible evidence of a totemic system in the presence of turtle carapaces resting upon their natural bases within the various graves. We found no attempts to construct subsurface vaults or to heap mounds of earth or rock above special graves. All burials were basic in that all were inserted below ground level in unprepared graves, in various positions, and at various depths.

It was thought that we might derive some idea of the individual's weight from the size of the grave; i.e., a lean person would require a narrower grave than a corpulent person, but no such indication was found.

FEATURES

Midden pits.—Midden pits are of two main types: (1) old storage pits which were no longer utilized as such or purposely dug pits which were specifically used to dispose of accumulated midden (pl. 81), and (2) pits which were utilized solely for the disposal of mussel (*Elliptio complanatus* (Solanda)), *Micromya constricta* (Conrad)), and other shell fish, such as *Campeloma rufum* (Haldeman), *Lioplax subcarinata* (Say), *Oxytrema virginica* (Gmelin), *Oxytrema catenaria dislocata* (Reeve), *Mudalia carinata procisso* (Anthony), *Mudalia carinata voriabilis* (Lea), *Campeloma decisum* (Say), *Oxytrema symmetrica* (Haldeman), *Ceriphasia symmetrica* (Haldeman), *Ceriphasia dislocata* (Reeve), and *Mudalia carinata* (Bruguiere). In the latter pits there is no soil admixture—just one solid mass of shells. The openings of these pits may vary as much as 2.0 feet. Some pits have mouths which measure only 0.5 foot across and range to a depth of 0.8 to 1.0 foot; others measure 2.5 feet across the mouth with depths of 4.5 feet and diameters of 3.0 feet across the widest section, giving the pits a rough olla-shaped outline. None were flat-bottomed.

We found that those pits, which were filled with midden material, were not uniform in cross section. Some were olla shaped, others were slightly longer than hemispherical, while others just rambled, creating an irregular outline of varying depths. Whether the latter were purposely built that way could not be determined since there were no delimiting areas within the midden contents.

Whether there was direct association between the pits and the habitational areas of these people could not be determined, since we were unable to define a single house.

HOUSE STRUCTURES

No alinement of postholes was discovered or indicated in the habitational area of this site. A number of random postholes were noted, but none formed even a small section of a well-defined pattern. Houses, if they ever existed, must have been of a very temporary nature since they failed altogether to register upon the site. Definite floor areas were nonexistent although numerous hearth areas were found scattered over the excavated area. That these burned areas, if they can truly be called hearths, represent the locus of daily living is inconceivable, since they are without hardpacked or prepared floors. Perhaps living quarters were ramadalike structures whose poles were inserted only sufficiently to hold up the flimsy structure and whose sides were covered with mats. All could decay without leaving traces sufficient to be later interpreted.

AGRICULTURE

> Carter (1951, p. 299) believes that: The time of beginning of agriculture varied in the United States, the earliest known date being about 1000 B.C.[13] at Bat Cave in New Mexico. The earliest known date does not mean this is the beginning. It is the earliest known date and nothing more. Plantsmen all recognize that a long period must precede the appearance of a domesticated plant.

The charred remains of small kernels of maize, *Zea*; beans, *Phaseolus vulgaris;* hulls from black walnuts, *Juglans nigra* L.; hickories, *Carya tomentosa* Nutt., *Carya ovata* (Mill.) k. Koch, *Carya ovalis* (Wangenh) Sarg.; acorns, *Quercus alba* L., *Quercus velutina* Lam., *Quercus bicolor* (Willd.), and possibly *Quercus montana* (Willd.), and some wild grass seeds were recovered from the contents of various midden pits.

Corn (*Zea*).—When the white man first arrived in America he found the Indians growing a great diversity of corn varieties including all of the principal types recognized today—dent, flint, flour, sweet, and popcorn. Previously there was no knowledge of these grains in the Old World.

> Thus the evidence that corn originated in America is so overwhelming that it seems sensible to concentrate, if not confine, our search for its wild ancestor to the Western Hemisphere. In America corn has obviously had an ancient history. The seminomadic hunting and fishing Indians in both North and South America augmented their diet of fish and game with corn from cultivated fields. . . .

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[13] Mangelsdorf (1950) gives a radiocarbon dating as of 3000 to 3900 B.C. to this same corn from Bat Cave, N. Mex.

This universal reliance of the pre-Columbian cultures on corn as the basic food plant, and its great diversity of varieties, greater than that of any other cereal, bespeak a long period of domestication. How old is corn as a cultivated plant? Fortunately this investigation is no longer wholly a matter of guesswork. Reasonably reliable estimates can be obtained by the ingenious method devised by Willard F. Libby, of the University of Chicago, for determining the age of ancient vegetal remains. . . . Libby's determinations of radiocarbon in archaeological remains of corn tend to bear out previous archaeological and geological estimates that the oldest corn yet found in South America goes back to about 1,000 B.C., and the oldest in North America is not earlier than 2,000 B.C. [Mangelsdorf, 1950, pp. 20–21.]

In the meantime a wholly unexpected discovery, made within the past two years, has furnished direct evidence for the theory that primitive corn was both a pod corn and a pop corn. During the summer of 1948 an expedition sponsored by the Peabody Museum of Harvard University and led by Herbert W. Dick, a graduate student in anthropology, uncovered many cobs and other parts of corn from the accumulated refuse in an abandoned rock shelter in New Mexico known as Bat Cave. This shelter was occupied from about 2,000 B.C. to 1,000 A.D. Uninhabited by modern concepts of sanitation, its successive generations of occupants allowed refuse and trash to accumulate in the cave to a depth of about six feet. Carefully removed and sifted by the archaeologists, the refuse yielded 766 specimens of shelled cobs, 125 loose kernels and various fragments of husks, leaf sheaths and tassels. The cobs are of particular interest, since they reveal a distinct evolutionary sequence. The oldest, at the bottom of the refuse heap, are the smallest and most primitive. These cobs and loose kernels from the same level prove that the earliest Bat Cave people grew a primitive variety of corn which was both a pop corn and a form of pod corn. . . .

The Bat Cave corn shows no evidence whatever of having stemmed from teosinte. But beginning about midway in the sequence there is strong evidence of the introduction of a corn that had become contaminated with teosinte. Thus the Bat Cave cobs suggest that early botanical investigators were not completely wrong in believing that teosinte played a role in the evolution of corn. Although teosinte clearly was not the progenitor of corn, it contributed its genes to corn's progress toward its present form. [Ibid., p. 24.]

Evidence of corn's American origin is based on findings of two climatologists—Dr. Paul Sears of Yale and Mrs. Kathryn Clisby of Oberlin, who have been studying changes in pollen fossils in relation to climatic fluctuations. They found grain pollen fossils, at first thought to be teosinte, in drill cores taken more than 200 feet below Mexico City. Definite determination that the fossil pollen grains were not teosinte, but corn was made by Professor Barghoorn and Miss Wolfe, who have developed new laboratory techniques for distinguishing the pollen of corn from that of other grasses such as teosinte. Professor Barghoorn estimates, on the basis of currently accepted glacial chronology, that the pollen is at least 60,000 years old. It thus antedates by many thousands of years the earliest evidence of agriculture or of man himself in this hemisphere. . . .

Primitive corn has been found by Professor Mangelsdorf and Dr. Folinat among ancient cobs dug up in 1950 (1948?) by Herbert Dick, then of the Colorado State Museum. [Earlier Dick was stated to be a graduate student in anthropology who led the expedition sponsored by the Peabody Museum of Harvard University.] This corn comes from Bat Cave in New Mexico and is dated at from 3,000 to 3,900 B.C. by radiocarbon estimates. The small cobs of the Bat Cave corn, scarcely larger than a one-cent piece, once bore about fifty tiny kernels. Remains of several kernels were found along with pieces of tassel, husk, and pollen grains. From the combined vegetal remains it was possible to recon-

> struct the ancient corn plant from which they came. This, it would seem, was a short, slender plant (about a foot or two in height) bearing a few kernels at the base of the tassel and a miniature ear just below. [Ibid.]

The Bat Cave corn, according to Professor Mangelsdorf, is the oldest and most primitive corn yet discovered. Although probably cultivated, it is not far removed from wild corn. Yet it has all of the botanical characteristics of modern corn except size. "This ancient Bat Cave corn," Professor Mangelsdorf says, "proves beyond a reasonable doubt the ancestor of corn was corn and not, as some 19th century botanists have supposed, the wild grass teosinte." (Mangelsdorf, 1954, pp. 425–426).

Adversely, Weatherwax (1950, pp. 57–58) takes exception to the findings recorded by Mangelsdorf and his Bat Cave material. He shows some "skepticism as to the broad conclusions which have been drawn from this discovery—and certainly much skepticism about what has been stated or implied in some of the reviews and news reports."

The common garden bean (*Phaseolus vulgaris*), on the other hand, has never received as much scientific attention as maize (*Zea*). Ludwig Wittmack (1879) was the first to actually suspect and indicate an American origin for this seed. Candolle (1885), Gray and Trumbull (1883 a), and other botanists followed and concurred. Hardenburg (1927, pp. 4–5) sums up the whole historical background in a terse statement:

> The common bean was formerly thought to have originated in India. Later, however, it became evident that the so-called *Phaseolus* of southern Asiatic countries was not identical with that of the Western Hemisphere. Beans of this type were being grown with corn by the American Indians at the time of the discovery of America. It is now generally conceded that the common bean is indigenous to tropical South America. From this beginning, it has become widely cultivated throughout the Western Hemisphere and is used mainly in three forms; namely, as snap, green-shell and dry-shell beans.
>
> Irish (1901) describes the plants of this genus as follows: Plant subglabrous, dwarf or climbing 6 feet or more. Leaflets ovate-acuminate, often oblique. Flowers in recemes shorter than the leaves, white or purplish-violet, medium size. Pods flattened to subcylindrical, straight, or curved, more or less turgid. Seeds variable in size, shape and color.

Following are the common name, common synonyms, and botanical name for the common field or garden bean:

Common name	*Botanical name*	*Common synonyms*
Common field or garden bean	*Phaseolus vulgaris*	Haricot (French) Kidney (English) Navy (American) Habas (Mexican) Feijaos (Portuguese) Frejoles (Spanish) Fagiolo (Italian) Bohnen (German)

Such varieties as Pinto, Pink, and Red Mexican belong to the *P. vulgaris* species, although probably more heat- and drought-resistant than the common varieties grown in the humid regions, are not as well adapted to semiarid conditions as the Tepary, *P. actifolius* var. *latifolius*. This variety has been extensively studied, classified, and described by Freeman (1912). It is said to have had not only an origin distinct from the kidney bean, but to be botanically distinct in being more resistant to heat, drought, and insect attacks, hence more productive in semi-arid regions. According to Freeman:

> The seeds are smaller averaging about .15 grams, and lack the characteristic flossiness in seed-coat. The flowers and leaves are also smaller, the latter having distinctly shorter petioles and being narrower, smoother, and with truncate instead of dordate base as in the kidney type. The seed is of various colors including white, pink, yellow, brown and black, some being self-colored, others flecked and mottled. The vines are usually trailing and bear many small four- to five-seeded straight pods. [Freeman, 1912, pp. 179–180.]

Wittmack described a number of the Southwest beans as being charred with the seed coats burned away allowing the cotyledons to separate. However, there apparently were a sufficient number complete enough to validate classification.

> The bulk of the beans were small, from 6.7 to 8.9 mm. long, 3.8 to 4.8 mm. wide, and 2.9 to 3.2 mm. thick. He comments that these beans were smaller than those grown in Europe at that time and noticeably smaller than beans from Peruvian graves. A single cotyledon of a bean was conspicuously larger with dimensions of 10.3 mm. long, 6.3 mm. wide, and 2.7 mm. thick. This he considered more normal size and comparable in dimension and form to the dwarf French bean of his day. Wittmack identified the beans of both sizes as garden beans, *Phascolus vulgaris*. [Jones, 1952, pp. 179–180.]

Freeman (1912, pp. 583–585) points out a number of ready distinctions of the garden bean and the Tepary. Most of these are based on vegetative characters or other features which could not be applied to the determination of archeological materials. One fairly consistent and distinctive difference is, however, the size of the seeds. If it can be established that the size difference is sufficiently distinct and constant, this could be applied in the identification of even charred beans in which most other diagnostic features have been obliterated. . . . Freeman gives the average dimensions of each variety (ibid., pp. 576–582, 593–602). Jones (1952, pp. 180–181) gives the following data on the garden bean:

	Length *Mm.*	Width *Mm.*	Thickness *Mm.*	Weight *Mm.*
Maximum average for a variety	12. 9	7. 8	5. 08	0. 34
Minimum average for a variety	9. 6	6. 8	4. 10	. 18
Average for all 20 varieties	11. 05	6. 85	4. 55	. 25
Average Clarksville specimen	11. 0	6. 5	4. 1	?

Applying the size criterion to the Clarksville beans, it is apparent that they fall well within the size range of an average garden variety as established by Freeman.

Maize and beans, and probably other horticultural products, could possibly have been introduced into this section of the eastern coast by way of the Gilmore Corridor from Central America and Mexico. It is possible that corn, as well as garden beans, first came into the Southwest and finally spread eastward into this section of Virginia and North Carolina. If this be true, then these same products would have to be much later in the Southeast than those dated by means of radiocarbon techniques in the Southwest.

All the nuts listed are indigenous to this section of the country and are available in season. Many of the early settlers tell of the various uses the Indians made of nuts. Since this aspect is rather well known, it is deemed wise not to elaborate upon this subject here.

TRAITS

The majority of the traits listed are characteristic of the broad Woodland (Algonquian) Pattern which occupied the eastern section of the United States from Maine to parts of South Carolina. Burial types, which are many, show a slow progression from the flexed to the extended, with bundle burial and cremation practices coming into the picture at a rather late date. Notable for their absence are the burial mound and the prepared tomb. In no instance were they found within the confines of the basin. Burials were never segregated. They occur beneath the floors of houses, beside houses, in oval and round graves, and in midden pits; some were even placed upon midden heaps and the midden was scooped over the remains. While burial offerings were rare they did occur in a number of instances. Whenever present, the individual was dressed in very elaborate bead-embroidered costume. Such costumes consisted of armbands, which extended from the wrists to the elbows, jackets like the modern bolero, kilts, breechcloths, and occasionally a shell-covered band worn below the knees.

With a number of the burials was the carapace of the box turtle left to indicate the totem to which the individual belonged. Only in extremely rare instances were these carapaces utilized as containers. Usually the carapace was placed on its base beside the body. This trait is the first positive proof that certain animals were chosen to represent clan affiliations in the prehistoric Southeast.

Most tools were very crudely made. Among the better made tools were adzes and a single pierced discoidal. Stone tools were not numerous but there were plenty to meet daily needs. Projectile points were made for specific purposes from flakes. These flakes were struck from a core at random without a fixed striking surface. The core was turned around and around between blows to find the likeliest surface for the next one. This procedure produced a very low percentage of usable flakes and their shape was unpredictable, thus necessitating much retouching to convert them into the desired tools. These flakes were retouched by either carefully directed blows or by the use of pressure from wood, bone, or antler tools. Similar flakes were converted into tools other than projectile points, such as knives, scrapers, and drills.

Point and drill types constitute a cultural assemblage. The basic point type in the upper levels is the small isosceles form with varying base treatment; the serrated point represents the very latest form derived from the early Late Woodland. All triangular points are rather widespread. Smaller forms were found in association with various notched and stemmed varieties usually associated with Algonquian cultural groupings. These are found throughout the Algonquian area although geographical peculiarities occur in special sites. The same holds true for the larger blades; the whole of the stone industry is concretely diagnostic, in a specific cultural comparison, with most of the Middle and early Late Woodland.

Hammerstones are not particularly diagnostic in that the types are ubiquitous in all Indian cultures.

Mortars are derived from large flat slabs in which a central shallow depression has been worked sufficiently large to accommodate a small discoidal-shaped mano or muller. The mano was used as a rubbing stone rather than a pounding stone; hence a grinding action is indicated. Neither of these tools is very diagnostic of a particular time for they occur in the Archaic as well as in the later Woodland cultures.

Hoes are crude, being shaped from thin sections of slate or from chert or rhyolite. Those fashioned from either chert or rhyolite can be distinguished from choppers only by the gloss acquired through use along the working section of the blade.

Celts of the typical Woodland type are present, but no complete specimen was found. Usually only the poll end was found which had been broken off from the blade section. From these fragments we were able to determine that celts were rather large in size, round to oval in cross section, and bluntly pointed at the polls. The true celt did not make its appearance in the Archaic but with pottery making.

Adzes, on the other hand, while rare, are very diagnostic. Those that were found were of the planoconvex type with either a single or a double cutting blade. These are typical of early Algonquian culture.

It is next to impossible to point out typical diagnostic types of bone artifacts, for, because there are only a few basic type forms which can appear, the same series are to be found not only at this site but in other sites of different time horizons and cultural affiliations. All cultures made use of split bone, whole bone, and altered bone awls, needles, flakers, chisels, and at some time or another bone and antler projectile points, beamers, fleshers, etc.; the basic form is the same wherever found. To assign cultural affinity to these objects, whether Algonquian, Iroquoian, Muskhogean, etc., is to indicate traits which can not rightfully be said to belong to any one assemblage of artifacts associated with a peculiar ethnic affinity. Similar bone awls have been described as belonging to the Iroquoian group, to Fort Ancient cultural sites, to Mississippian cultures of Kentucky, Tennessee, and Alabama, and to various Woodland sites in New York and the New England groups. The same can be said about bone beamers or spokeshaves, chisels, needles, flakers of both the long and short varieties, beaver tooth chisels, fishhooks, and bone beads. All have rather wide distribution.

Objects made of shell, such as beads and pendants, are in about the same class. *Busycon* sp., *Marginella*, *Olivella*, and *Oliva* are some of the types which were widely dispersed. Various types of beads were made from these shells. Circular pendants with a single central perforation, two marginal perforations, or unperforated, made from the *Busycon*, are ubiquitous in the late Middle Woodland and early Late Woodland cultures. Like most late sites, shell was used quite freely as trim on garments and as bodily ornamentation.

In only one instance were drilled elk teeth used as pendants. These were used in combination with small shell disk-shaped beads in a necklace.

Drilled canine teeth of dog, fox, and possibly the gray wolf were utilized as beads and pendants.

Various types of pipes were recovered. The most common form is the typical Woodland elbow pipe which, originating from a small tube with a very small bowl, evolved into a well-formed elbow type with a fairly large bowl. These were made from either clay or steatite as illustrated in plate 62. Zoomorphic forms were recovered through the action of the bulldozer (pl. 63, *a*, *c*). A small rabbit-shaped pipe was made from a block of steatite. What might be called a "frog" was modeled from clay. Since the bulldozer pushed these out of the site we do not know their provenience. Both of these forms are illustrated in plate 63. The elbow forms appear to be related to what McGuire terms the Atlantic Coastal forms. A number of the stem forms comply closely with the Southern Mound types in that there is an enlarged band at the end of the stem.

The major significant ceramic features characteristic of the pottery from the various sites are limited to the universal choice of an aplastic, the distinctive vessel form, and the overall surface treatment. Attributed to the endemic Woodland culture, these features constitute an assemblage of traits which clearly distinguish this culture as an affiliate with a northern rather than with a southern cultural entity. All vessels are sand tempered. The earliest paste is composed of finely divided sand particles not much larger than those of the clay itself. This paste type gave way to one using increased quantities of a slightly larger sand grain. Occasional particles of grit or gravel occurred but at no time were these numerous.

The number of pottery types and surface elements appear as a corollary to the northern forms. Basal type is conoidal or subconoidal. Design elements when they appear are usually confined to the neck or shoulder area. During the initial stage of manufacture the exterior of the vessel was malleated with a cord-wrapped paddle or impressed with a fabric. This treatment was covered during the terminal phase with a textile-impressed stage. Handles, which were just beginning to appear when the site was being abandoned, occur in the form of vertical lugs or crude loops which were placed flush with the rim or just below the rim. In every instance the lugs were pierced for the purpose of receiving some sort of fiber for suspension. Handles occur only on the smaller jars with almost vertical sides.

Bowls, with the exception of one aberrant flat-based form, are hemispherical, wide-mouthed, and flare-sided with either a conoidal or subconoidal base common to many of the Woodland vessels of the Northeast. Counter to the predominating use of the curved paddle in the Southeast, we found no evidence of the use of prepared paddle designs within the entire basin area. This fact completely divorces this section of the East from the Southeastern influences.

As indicated, the peoples of the John H. Kerr Reservoir Basin had a definite cultural connection with the overall endemic Woodland cultural tradition of the probable Algonquian to the North and the Northeast which permeated the area during early Woodland times. This intrusion came in contact with the influences of the South and Southeast somewhere in the vicinity of the Yadkin River drainage, where it rebounded upon itself, bringing about a greater refinement than is reflected in the cultures to the Northeast.

TRAIT LIST OF SITE 44MC14

The following list of traits for the Clarksville site (44Mc14) has been prepared from the present excavation. An attempt has been made to arrange these traits in a functional order as outlined by Fairbanks, 1942, pp. 228–229.

SUBSISTENCE ACTIVITY:
- *Collecting Complex:*
  - Collecting mussels, snails, and other shellfish
  - Collecting wild nuts and grass seeds

SUBSISTENCE ACTIVITY—Continued
- *Hunting and fishing complex:*
  - Bear, deer, raccoon, fox, rabbit, turkey, waterfowls of various sorts, elk, opossum, etc.
  - Garfish, sturgeon, etc.
  - Use of line and hook
  - Use of nets, inferential, from imprints upon exterior of clay vessels
  - Use of bow and arrow
  - Use of atlatl
  - Domestic dog
- *Agriculture complex:*
  - Growing corn
  - Growing beans
  - Growing tobacco, or a similar substance, inferred from the dottle present in various pipe bowls

COMMUNITY PLAN ACTIVITY:
- *Village location and plan complex:*
  - Village located near stream
  - Clustered without plan
  - Village located near shoal where shellfish are available
  - Deep midden
  - Midden pits numerous
  - Fired areas with broken stones
  - Fire cracked stones in debris
  - Hearths irregular in shape
  - Pits containing only shellfish remains
  - Rock-surrounded wells scattered throughout habitational area
- *Architectural complex:*
  - Scattered post molds with no direct evidence of any structures

CEREMONIAL ACTIVITY:
- *Burial complex:*
  - Circular graves
  - Oval graves
  - Flesh burials
  - Single burials
  - Multiple burials
  - Disturbed burials
  - Reburials
  - Flexed burials on side
  - Flexed burials on back
  - Semiflexed burials on side
  - Semiflexed burials on back
  - Extended burials
  - Burials with utility artifacts
  - Burials with ornaments
  - Burial offerings with adults
  - Burial offerings with young
  - Burials with turtle carapace as totemic emblems
  - Burials without ornaments
  - Burials without utility artifacts
  - Burials made upon midden heap without insertion into soil
  - Burials with postholes within grave
  - Grave goods scanty
  - Grave goods usually near head

CEREMONIAL ACTIVITY—Continued
- *Burial complex*—Continued
  - Grave goods—shell beads
  - Grave goods—pottery vessels
  - Grave goods—copper beads
  - Grave goods—projectile points
  - Grave goods—adz heads
  - Grave goods—pipes of clay or stone
  - Grave goods—shell gorgets
  - Grave goods—chunky stone
  - Grave goods—bone necklace
  - Grave goods—bone awls
  - Grave goods—terrapin carapace
  - Grave goods—flat stones
  - Grave goods—broken sections of celts
  - Dog burials

TECHNOLOGICAL AND ARTISTIC ACTIVITY:
- *Pottery complex:*
  - Coiling
  - Modelling
  - Pottery in all levels
  - Pottery, sand-tempered
  - Rims and lips usually simple during early stage
  - Pseudo-rim strip and lip ticking during later stage
  - Net impressed
  - Cord-wrapped hand impressed
  - Fabric marked
  - Textile impressed
  - Textile roughened
  - Plain
  - Simple stamped
  - Incised
  - Punctated
  - Combed
  - Bowl forms
  - Olla forms
  - Dipper forms
  - Miniature forms
  - Nondescript burned clay chunks
  - Adornos
  - Pipes, elbow, straight, and zoomorphic
  - Discoidals, sherd
- *Rough stone complex:*
  - Hammerstones, natural hardheads
  - Hammerstones, spherical
  - Hammerstones, rough discoidals
  - Hammerstones, pitted
  - Mortars, flat, sandstone
  - Manos or mullers, disk-shaped
- *Chipped-stone complex:*
  - Projectile points, quartz, isosceles, stemless, medium sized
  - Projectile points, quartz, isosceles, stemless, small sized
  - Projectile points, quartz, stemmed, medium sized
  - Projectile points, chert, isosceles, stemless, medium sized

TECHNOLOGICAL AND ARTISTIC ACTIVITY—Continued
- *Chipped-stone complex*—Continued
  - Projectile points, chert, isosceles, stemless, small sized
  - Projectile points, quartz, isosceles, stemless, serrated edged, small sized
  - Projectile points, chert, isosceles, stemless, serrated edged, small sized
  - Projectile points, chert, isosceles, stemless, wide based
  - Projectile points, chert, stemmed
  - Projectile points, quartz, stemmed
  - Projectile points, quartz, side-notched
  - Projectile points, quartz, corner-notched
  - Drills, expanded base
  - Drills, single point, cylindrical
  - Knives
  - Scrapers
  - Celts
- *Ground-stone complex:*
  - Celts, flat, rectangular
  - Celts, narrow polled
  - Adz, single bit, large
  - Adz, double bit, small
  - Discoidal, perforated incised
  - Discoidal, pitted
  - Discoidal, plain
  - Gorget, bar, two-hole
  - Pipe, elbow, steatite
  - Pipe, zoomorphic, steatite
  - Whetstone
  - Incised stone tablet (?)
  - Hoes
  - Balls
  - Red ocher chunks, faceted
  - Yellow ocher chunks, faceted
  - Graphite chunks, faceted
- *Miscellaneous stone complex:*
  - Stone slabs in burials
  - Stone lined wells
  - Fire-cracked stones in fireplaces
  - Fire-cracked stones in village debris
- *Bone complex:*
  - Cut antler sections
  - Antler drifts
  - Antler flakers, long
  - Antler flakers, short
  - Antler flakers, spatulate
  - Forked deer ulna
  - Spokeshaves (beamers)
  - Awls, deer ulna
  - Awls, bone splinter
  - Awls, small animal and bird
  - Awls, fish spines
  - Awls, garfish jaws
  - Awls, deer cannon-bone
  - Awls, spatulate
  - Awls, turkey metatarsals

TECHNOLOGICAL AND ARTISTIC ACTIVITY—Continued
- *Bone complex*—Continued
    - Awls, whole bones
    - Pierced deer toe bones
    - Altered deer toe bones as projectile tips
    - Deer's distal phalanx altered into projectile points
    - Fishhooks
    - Tubes, cylindrical
    - Tubes, barrel-shaped
    - Bodkins, expanded base, long
    - Bodkins, expanded base, perforated
    - Bodkins, expanded base, long, side notched
    - Pins, turkey leg tendon bones, double pointed
    - Pins, turkey leg tendon bones, single pointed
    - Spatulate forms
    - Chisels
    - Jaws, deer, cut and perforated
    - Jaws, deer, cut, unperforated
    - Canine teeth, perforated, pendants
    - Canine teeth, unperforated
    - Perforated milk teeth of elk, pendants
    - Turtle carapace spoon
    - Turtle carapace rattle
    - Turtle carapace, emblematic
    - Split beaver's teeth, chisels
    - Bone pendants
- *Shell complex:*
    - Beads, small, disk-shaped
    - Beads, large, disk-shaped
    - Beads, spherical
    - Beads, hemispherical
    - Beads, tubular, columella cores, large, heavy
    - Beads, tubular, small
    - Beads, hour-glass-shaped, small
    - Beads, spire cut, olivella
    - Beads, spire cut, marginella
    - Beads, fresh-water mussel
    - Beads, *Busycon*
    - Disks, small, unperforated
    - Disks, small perforated
    - Disks, large unperforated
    - Disks, perforated, incised
- *Metal complex:*
    - Beads, tubular, rolled, of varying lengths copper
- *Fiber complex:*
    - Cord, clockwise twist
    - Fabric, finger weave
    - Fabric, loom weave
    - Fabric, plain twined openwork
    - Fabric, plain twined, close mesh
    - Fabric, twilled
    - Baskets, coiled technique
- *Dress complex:*
    - Shell collars of various sized beads

TECHNOLOGICAL AND ARTISTIC ACTIVITY—Continued

- *Dress complex*—Continued
    - Copper bead pendant necklace
    - Shell bead wrist bands
    - Shell bead covered skirts, kilts, or aprons
    - Shell bead waist bands
    - Shell bead necklaces—*Olivella*
    - Shell bead necklaces—*Marginella*
    - Shell gorgets worn around neck
    - Shell gorgets worn upon chest
    - Bone bead worn individually suspended on cord from neck
    - Bird and animal bone necklace
    - Sheaf of arrows bound to upper arm by band
    - Bar gorgets
- *Trade complex:*
    - *Busycon* shells from Gulf of Mexico and Atlantic Florida area
    - *Olivella* shell from Georgia coast and Gulf of Mexico
    - *Marginella* shell from Gulf of Mexico
    - Copper, from either western Virginia, North Carolina, or the Lake Superior region
    - Graphite from western Virginia or Pennsylvania
    - Steatite from Meherrin River area
    - Manganese from western Virginia

DISCUSSION

The Clarksville village site (44Mc14) lying directly east of Occaneechi Island and on the east bank of the Roanoke River was first settled during the early part of the Woodland Period and later abandoned during the early part of the Late Woodland, about the middle part of the 16th century. The latter is purely a guess date and cannot be verified by any positive means of dating, such as radiocarbon, dendrochronology, etc. If we accept the beginning and terminal dates, the extent of occupation and the density of population, as implied from the number of burials recovered, the whole would tend to indicate a rather long interval.

At the time of the 1947 survey, particular attention was given to testing this site. It was then noted that the surface collection, together with the material recovered from the various test pits, represented the longest pottery-bearing sequence within the reservoir area. This was later corroborated and substantiated during the 1951 and 1952 field seasons. (See pottery types chart, facing p. 292, for the entire reservoir basin.)

Throughout the occupational interval there were a number of subtle cultural changes which were noted, namely: a gradual change in burial ritual from a flexed through semiflexed and ending with an extended form for both adults and infants. The earlier forms were fairly consistent and uniform as to depth, averaging between 2.0 to 3.3 feet. The extended forms showed greater latitude, for we found that the shallowest appeared at 1.5 feet under the existing surface and the deepest measured 6.9 feet beneath the surface.

Burial ritual indicated either flexed or extended. Rarely were they ever associated with specially placed objects. During the early period there were no burial goods present in any of the graves and it was during the Middle and early Late Woodland that a practice was commenced in which such things as shell beads, shell gorgets, clay vessels, turtle carapace as totemic indicators, bone awls, and elbow pipes of clay or steatite were placed with the bodies. This would indicate that they had more leisure time to devote to the manufacture of these objects and to the refinement of their burial ritualism. Burials occurred either as single, double, or multiple interments. Head direction and position, as well as depths, were variable factors.

The ceramic remains indicated that the Clarksville site was first occupied by a small contingent of the makers of the Hyco Series. These people were not numerous, for only traces are found of Hyco Fabric Marked, Hyco Cord-wrapped Paddled, Hyco Plain, Hyco Combed, Hyco Net Impressed, Hyco Textile Impressed, and Simple Stamped.

Later, a group of newcomers, the manufacturers of the Clarksville Series, came into the area. There was a peaceful amalgamation of the two groups as indicated by a certain blending of surface techniques with each group retaining its own specified paste type. The latter group utilized a sandier, coarser, contorted paste which was fired under oxido-reduced atmospheric conditions, resulting in a coarser ware which was darker in color.

Once these Clarksville characteristics were definitely established and accepted, the Hyco method of manufacture and many of their exterior surface treatments were abandoned and the newer methods received the greater attention and were later elaborated on. As time progressed greated emphasis was placed on impressing various types of textiles upon the exteriors of vessels, a trend which dominated the field at the time of abandonment of the site.

House types are still problematical. A number of random post molds were noted but none of them were alined in any definite pattern. It has been supposed that the shelters were very flimsy things, which were so light that they failed to leave behind any indications of their existence.

Tools made from bone material appeared early and persisted throughout the existence of the site, as indicated by the various finds in the various levels of the deposit. Such tools consisted of various types of awls, beamers, fleshers, fishhooks, and bodkins. Broken animal bones were exceedingly plentiful, indicating that the occupants were unusually good hunters and that game was plentiful in the immediate area.

TOLLIFERO COMPONENT
(44Ha6)

SITE LOCATION AND DESCRIPTION

Around and under the ruined old Tollifero home on Occaneechi Island, in Halifax County, Va., is an old Indian village site (44Ha6), together with an accompanying burial area. The site occupies an area roughly 200 feet long by 63 feet wide and lies about midway down the length of the island on the Dan River side.

Long before the excavations started, the site was penetrated, in the 18th century, by the foundation for the house and for trenches to hold water pipes and drainage tile. During this same interval a number of pits were also dug to dispose of accumulated trash around the house. All of these activities had to be segregated and taken into account when the site was dug to investigate the aboriginal remains. Just because a white man's object lay alongside that of an aboriginal artifact did not necessarily denote contemporaneity.

The long axis of the Occaneechi Island, at this point, is east and west, with the Roanoke River flowing along its northern shores and the Dan River along its southern shore. Starting 80 feet away from the edge of the Dan River we dug a 30-foot wide trench northward, at the rise of the secondary terrace, toward the old Tollifero house. The first 5-foot section of the trench was sunk to a depth of slightly over 7 feet, at which time we hit water level. Between the bottom of the cultural layer and the water table we found a stratum of clean river-deposited sand that measured between 38 and 42 inches in thickness (figs. 51, 52).

Beneath the present humus layer, which averaged around 0.5 foot in thickness, there appeared the top of the aboriginal deposit, which, when sectioned, averaged between 2.0 to 2.4 feet in thickness in its densest area with an occasional object occurring 6 to 7 inches beneath this. The midden, as a whole, consisted of the ubiquitous potsherd, broken stones, stone chips, projectile points, broken bones, mussel shells, and a dark brown humic-laden soil mixed with ash and charcoal bits. As stated above, a number of white man's objects were found which could be dated the same as the house ruins that rested directly above the remains laid down by the Indians.

In searching the area we came across a number of bowl-shaped midden pits. Some contained nothing but a heavily laden humus soil mixed with a number of mussel shells which were well on the way to complete decomposition. Others contained nothing but mussel shells with practically no soil mixed with them. Still others contained numerous potsherds, broken bones, and broken stones, all typical of an Indian midden pit.

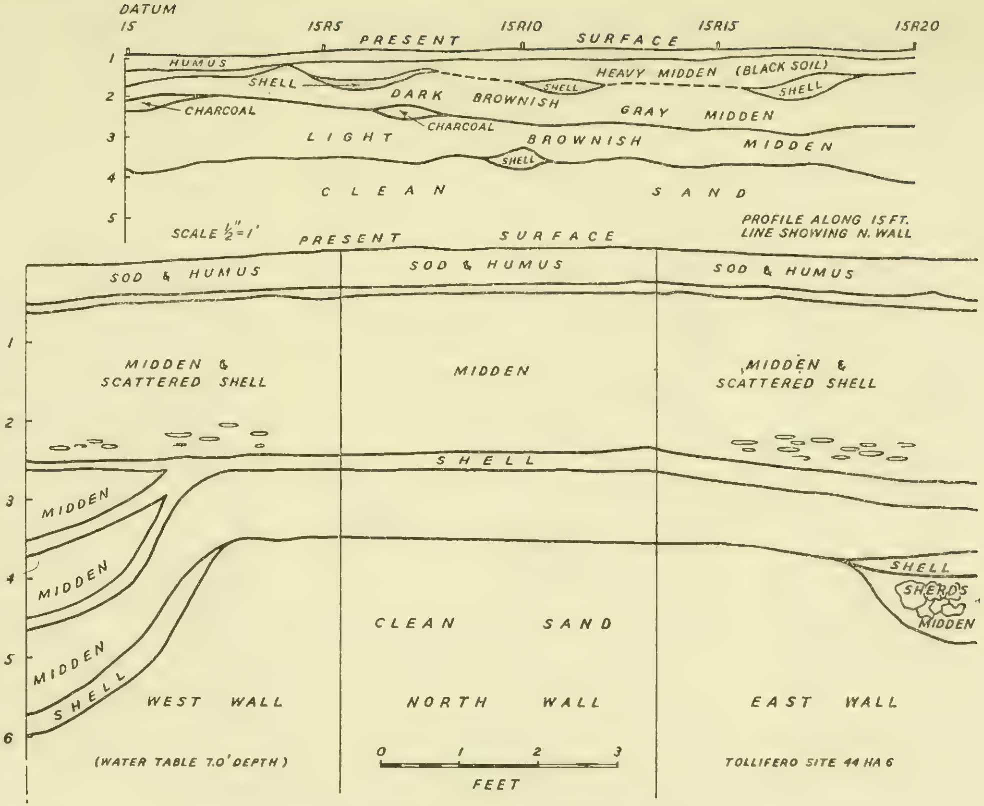
DATUM 15
15R5
15R10
15R15
15R20
PRESENT SURFACE
1
2
3
4
5
HUMUS
SHELL
HEAVY MIDDEN (BLACK SOIL)
SHELL
SHELL
CHARCOAL
DARK BROWNISH GRAY MIDDEN
CHARCOAL
LIGHT BROWNISH MIDDEN
SHELL
CLEAN SAND
SCALE 1/2"=1'
PROFILE ALONG 15 FT. LINE SHOWING N. WALL
PRESENT SURFACE
SOD & HUMUS
SOD & HUMUS
SOD & HUMUS
1
2
3
4
5
6
MIDDEN & SCATTERED SHELL
MIDDEN
MIDDEN & SCATTERED SHELL
SHELL
MIDDEN
MIDDEN
MIDDEN
SHELL
SHELL
SHERDS
MIDDEN
CLEAN SAND
WEST WALL
NORTH WALL
EAST WALL
(WATER TABLE 7.0' DEPTH)
0
1
2
3
FEET
TOLLIFERO SITE 44 HA 6

FIGURE 52.—Profiles of the test pit and along the 15-foot line showing the north wall, Tollifero site, 44Ha6.

Some pits were hemispherical in cross section while others were formed by a series of connecting pits, giving the whole a sort of amoebic outline. Most pits had sloping sides and rounded bottoms. Those dug by white man had vertical sides and either rounded or square bottoms.

Throughout the area worked, which measured 110 feet along the southern limits and 45 feet along the eastern limits, we located two burial areas (fig. 53). Burial types have been listed as fully flexed, partially flexed, bundle, extended, and what must have been an attempt to cremate. The latter, exemplified in a single instance, concerned a number of individuals who were submitted to the fire but were only partially consumed. These remains were further reduced in size by pounding and the whole heaped into a common pile and covered over with midden material. Single and multiple burials also occurred.

Again we found a number of turtle carapaces associated with some of the burials. Most of these were so placed that they rested upon their natural base, which excludes their possible use as vessels to retain food or other materials. Their position, in relation to the skeletal remains, would strengthen our premise that they functioned solely as indicators of clan affiliation or totemic badges. We got our first inkling as to their status while excavating a portion of the Clarksville site, 44Mc14. Now we found this same situation occurring here.

In our second burial area, we located the remains of several small dogs, each in its own special grave. Most of the dogs were coiled up into small bundles, with their extremities folded close to their bodies, and placed into small round graves. Some of them were well preserved while others were badly disintegrated, and still others were minus their skulls.

In the eastern limits of our diggings we found the remains of a fairly large rectangular structure, Feature 24 (fig. 54 and pl. 82). This was represented by a well-packed floor. The corners were rounded. Within its western limits were two square post molds. We traced their origin up to the base of the present humus and determined that they formed part of the garden fence put up by the occupants of the old Tollifero house; hence they are of white man's origin. In the western sector of this rectangular structure were three round post molds. These were not found until the floor of the aboriginal structure was completely uncovered. No other molds were found either inside of the structure or the area surrounding it. The floor of the house now rests between 18 to 20 inches lower than the present ground level. We still do not know what type of walls made up the sides or anything about roof supports or the shape of the final roof. We have supposed that wall and roof supports must have originated on the shelf outside of the floor pit. Whether this was a religious structure

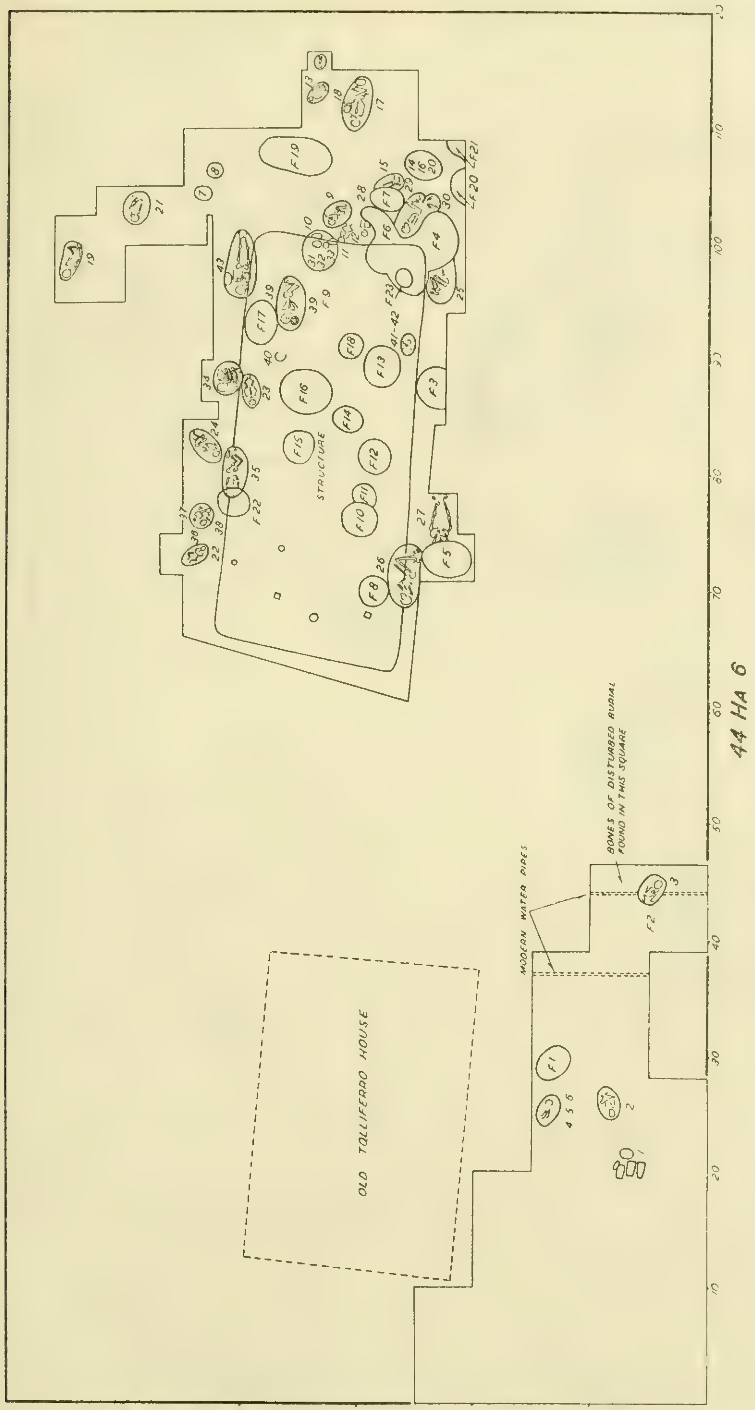
44 HA 6
OLD TOLLIFERRO HOUSE
STRUCTURE
MODERN WATER PIPES
BONES OF DISTURBED BURIAL FOUND IN THIS SQUARE
F1
F2
F3
F4
F5
F6
F7
F8
F9
F10
F11
F12
F13
F14
F15
F16
F17
F18
F19
F20
F21
F22
F23
1
2
3
4 5 6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
37
38
39
40
41-42
43
0
10
20
30
40
50
60
70
80
90
100
110
120

FIGURE 53.—Areas explored in the Tollifero site, 44Ha6.

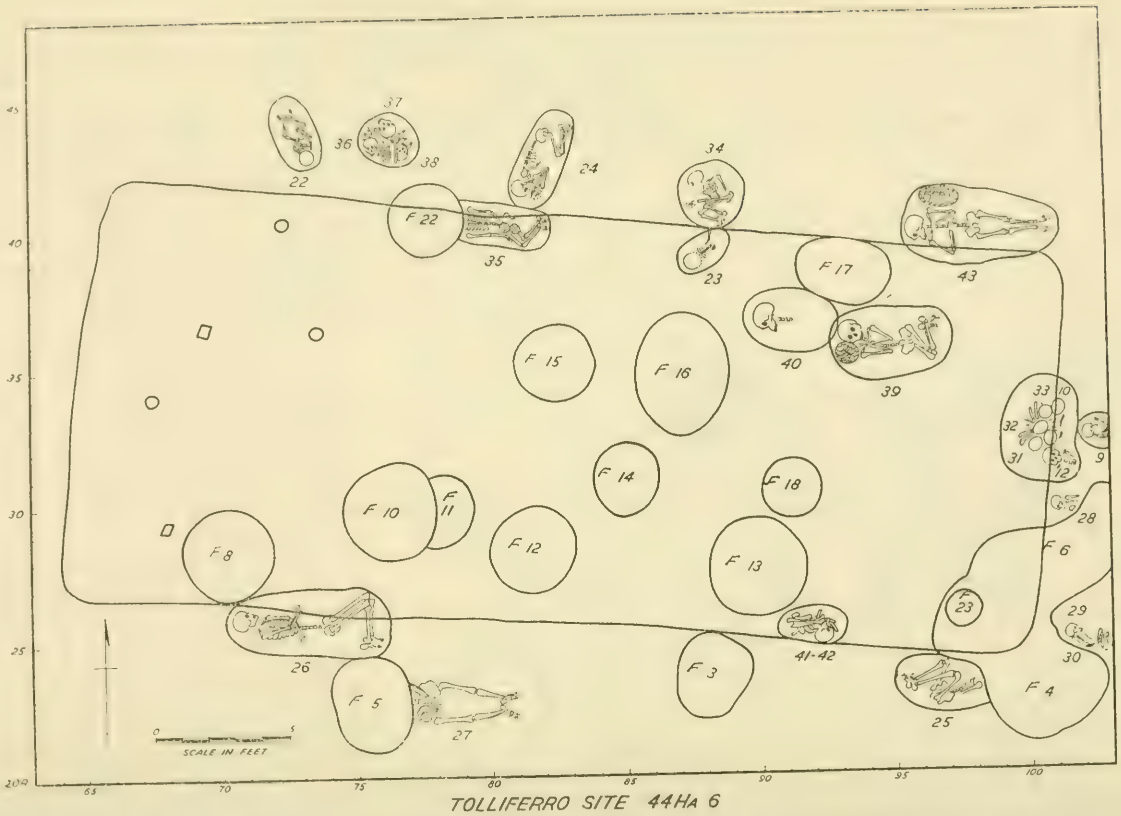
TOLLIFERRO SITE 44HA 6
SCALE IN FEET
0
5
F 3
F 4
F 5
F 6
F 8
F 10
F 11
F 12
F 13
F 14
F 15
F 16
F 17
F 18
F 22
F 23
9
10
12
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41-42
43
45
40
35
30
25
20
65
70
75
80
85
90
95
100

Figure 54.—Feature 24, showing arrangement of the various pits, postholes, and burials, Tollifero site 44Ha6.

could not be determined, but since it was burned and rebuilt a number of times, it is highly significant.

It was found that this structure had been burned a number of times and rebuilt each time on the same spot. Each new structure was identical in size with the original, and each time it was rebuilt a new floor covering was spread over the old. Four floors were found, one above the other. Each floor was covered with a thin layer of wood ash. Upon each floor was a layer of clean river sand, an inch or two thick. In cross sectioning these floors we found alternating bands of red burned earth, above this was the layer of wood ash, and above that was the clean river sand.

Prior to the construction of the original structure, we found that a number of burials, as well as a number of saucer-shaped shallow pits, were inserted into the area. These were discovered after all traces of the structure were removed.

After the final abandonment of the structure and a layer of midden was allowed to accumulate within the pit area outlined by the walls of the structure, a number of burials and pits were dug there. It was found that there was no difference between the ritualistic placement of the dead at this time and that practiced earlier, which helped to prove that this site was occupied by one cultural component rather intensively.

DESCRIPTION OF FEATURES

In exploring the area to the south of the old Tollifero house, considerable midden material was found, Burials 1 to 6, as well as two midden pits, Features 1 and 2.

Feature 1, a midden pit, occurred immediately east of a multiple burial, Burial Nos. 4, 5, and 6. It is roughly oval in outline at the top and was first picked up at a depth of 0.2 foot beneath the humus layer. This was an Indian-made midden pit in that it contained numerous sherds, a fairly heavy concentration of bone, a few chipped-stone objects all mixed with a heavy dark-brown soil which held bits of charcoal, chunks of broken stones, and thin lenses of wood ash. The pit was widest at the mouth, the sides slanted inward and terminated in a rounded base. Final depth was found to be 2.5 feet.

Feature 2 was a midden pit dug by white man. It was slightly southeast of Feature 1, circular in outline, having vertical walls, and rounded base. Two brass buckles, a brass thimble, a number of badly rusted knife blades, as well as bits of iron chain, horseshoes, and nails were salvaged. We picked out this pit after we had removed the present humus layer. Whether the present humus layer was penetrated in digging this pit could not be determined.

Since the area to the south of the old house was not too fruitful, we changed our position to the east of the house. Here we were more successful.

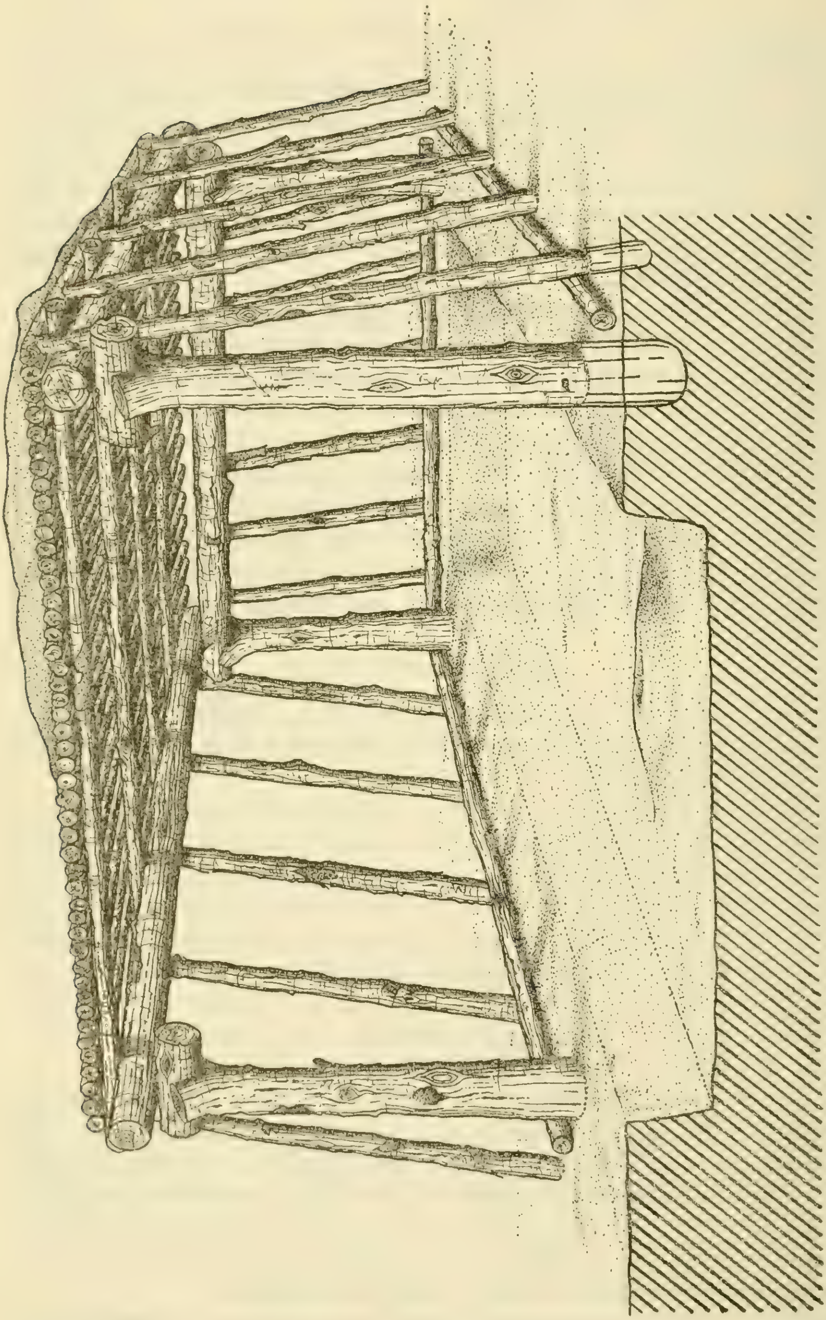

FIGURE 55.—Schematic drawing of Feature 24, Tollifero site, 44Ha6.

Feature 3, a pit, was roughly rectangular in outline and filled mostly with a heavy concentration of humus soil. In cleaning out the pit we found a few fresh-water mussels, fragments of broken bones, and only a few sherds. Later we found that the pit almost touched the southern limits of the floor of Feature 24 but it never encroached on it. Walls were irregular and had a tendency to slope inward to a rounded base 1.9 feet below the mouth of the pit.

Features 4 and 6 were one and the same pit. They both appeared as two separate circular outlines but upon exploration they converged into a single pit. It was one of those rambling affairs with uneven sides and varying depths. At one time it encroached upon Burial No. 25. In so doing the cranial section of the skeleton was removed so that the individual remained headless. We managed to recover a number of sherds as well as some chipped-stone artifacts and a mass of broken animal bones.

Feature 5 is an oval pit, first noted about 1.0 foot beneath the surface. Here the humus measured 0.5 foot in thickness. It was mostly filled with a heavy dark humic soil. At the time it was dug it intruded into an earlier burial, Burial No. 27, and in so doing had destroyed practically the entire torso of this burial.

Features 8, 10, 11, 12, 13, 14, 15, 16, 17, 18, 22, and 23 were all confined to the floor area of Feature 24. None were very deep; all were more or less saucer shaped in form, and the material cultural remains were meager.

Features 8, 10, and 11 were located after the uppermost floor was removed, indicating that they were placed into the structure while floor number three was being used.

Features 22 and 23 had their origin when the second floor from the bottom was in use. These two pits penetrated the original floor. Feature 23 was rather small and held a cache of fresh-water mussel shells. Feature 22 was much deeper than the average floor pit. When it was dug it penetrated the burial pit of Burial No. 35, at which time the skull was removed leaving behind a decapitated skeleton.

Features 7, 9, 19, 20, and 21 were to the east of Feature 24. None were spectacular. All conformed to the pattern of the other midden pits in that they were oval in outline, displayed sloping sides, and terminated with rounded bases.

HUMAN BURIALS

Intermixed with the cultural debris were the remains of 31 adults, 12 children, and 5 dogs. We were able to separate the 43 human burials into 13 males, 8 females, 12 children, and 10 undeterminates. We found that burial disposition could be classified in seven categories: 7 flexed, 13 semiflexed; 10 bundle (pls. 84, *b*; 85 *b*), either individually or in groups; 1 skull; 5 reburials; 3 cremations, or rather the occurrence of at least 3 partially cremated remains placed into a common grave; and 2 very small children and 2 adults placed extended in individual graves. Head direction is variable. Twenty-six were complete enough to determine this factor. Three had their heads pointing to the east, 12 to the west, 1 to the south, 6 to the northwest, 1 to the southeast, 1 to the west, and 2 to the north.

Whenever primary inhumations occurred only a single individual was placed into a grave. The exception occurred with burial No. 17. In this grave was placed the flesh burial of an adult female, semiflexed, lying on her back with head to the west. Along with her in the same grave and next to her left side were placed the bundled remains of an adult male. At the foot of the common grave were the remains of a very large turtle carapace (*Pseudemys rubiventris*), the largest seen in the Roanoke Valley. It was resting upon its natural base with crest uppermost. Since there was nothing under the shell the weight of the grave fill had crushed it flat (pl. 84, *a*).

The question is then raised: Why were the bundled remains of an adult male inserted into a common grave along with a flesh burial of an adult female? Could this relate to a family affiliation such as husband and wife? The placement indicated that the death of the man had occurred prior to that of the woman and after her death his remains were placed along with hers in a common grave. Other explanations and questions could be advanced but the true answer will probably never be found.

The practice of cremation was never complete, when attempted, at this site. The partially cremated remains of at least three individuals were placed into a common grave: Burials 14, 18, and 20. All of the bones, after having been subjected to the direct action of fire, were broken into small bits and the lot buried or deposited in a common pit. The pit, in this instance, was a secondary one dug into a former midden pit. After the partially calcined bones were inserted, a large flat rock was placed over the opening and rested directly upon the top of the remains.

James (1928, pp. 228–229) noted that: "Partial cremation seems to have been more prevalent than the burning of the body in its entirety, the latter belonging essentially to the neighborhood of the Lakes and the Southeast district."

When the bones from this deposit were examined it was noted that "checking" or "reticulation" was not one of the characteristic features of this bone mass. Krogman (1939), after studying large numbers of cremated remains of both the Hopewell and Adena cultures, noted that human bones when stripped of the flesh and allowed to dry before being subjected to the intense heat necessary to bring about cremation tend to display "checking like the patina of age in an oil painting."

> . . . when burial forms begin to be stereotyped by tradition they tend to influence beliefs about the locality and nature of the abode of the dead because their original purpose has been forgotten, as, for instance, when fire used for drying a corpse was assigned an eschatological significance. In course of time these beliefs have reacted upon the ritual under the guidance of priests and medicine men, and certain customs have become definitely associated with the life or destination of the soul after death. But with the migration of tribes from one region to another, the tendency seems to have been to regard the original home as the land of the dead whither ghosts returned at death. This belief has frequently influenced not only the mode of disposal but also such aspects of funerary ritual as orientation of the body, and the provision made for the journey to the ancestral spiritworld, till finally the actual abode of the dead may have lost its original character and became a distant land either beyond the sea or in a mythical region or island of the blest. Thus, the belief that the cremating section of a tribe went to the sky may have been succeeded by a secondary belief resulting from migration, and in this way a confusion between doctrine and practice has arisen. . . . With the break-up of culture through migration and racial admixture, the cult practice and beliefs have been in a constant state of flux. . . . Cremation (or raised burial) which at one time seems to have been reserved for the ruling class where any such distinction was made, was later employed for everybody. . . . But the analysis of the data suggests that the practice of cremation originally grew out of the attempt to preserve the body when the mortal remains came to occupy a position of secondary importance in the attainment of the immortality of the soul. [Krogman, 1939, pp. 233–234]

Dr. Krogman states that it is particularly difficult to distinguish between the burning of a body in the flesh and the burning of green bones, that is, bones from which the flesh has but recently been removed (Webb and Snow, 1945, p. 189).

Unintentional charring of bones did occur when the rectangular structure, Feature 24, was initially burned. The heat created during this period was sufficient not only to change the physical nature of the floor itself but to char the skeletal remains of an infant burial lying but 0.4 foot beneath the floor level.

Burial goods were meager and were not created especially to accompany the dead; but in a number of instances we found objects which were directly or indirectly associated with the dead. Following is a detailed description of these burials:

Burial No. 2 is that of an adult male, semiflexed, lying upon his back with knees partially brought forward and the head pointing to the west. Within the chest cavity was a quartz projectile point which probably terminated his days upon this earth. Around his neck must have been some sort of cord which held the seven disk-shaped shell beads that rested upon his chest. Above his left shoulder and in front of his face was a miniature steatite vessel whose base was uppermost. Beneath and inside of this tiny vessel were seven small quartz pebbles. Whether the number seven held an esoteric meaning could not be determined from these remains but it does seem a bit queer that there were both seven beads and seven pebbles associated with this individual.

Burial No. 9 is that of an adult male, age 35–40, semiflexed, lying on his left side with head pointing to the west. Around his neck were the remains of a necklace made up of perforated canine teeth. Each tooth was perforated, not by drilling but by attrition, first on one side and then on the other, which formed opposing grooves. These grooves were deepest at the middle and feathered out at both ends. Contact was made in the approximate center of the groove. Subsequently this aperture was slightly enlarged prior to threading. The longest tooth measured 3.3 cm. in length, while the shortest measured 2.0 cm. in length. One face of the enamel of these teeth is incrusted with a grayish-black shiny substance which does not appear on the other, or inner, face.

Burial Nos. 16 and 17 (pl. 84), a primary and secondary burial, together with the large turtle carapace at the foot of the grave, were described earlier.

Burial No. 22 is that of an infant that died at birth or soon after, lying extended on its back with head to the southeast and legs "spread eagle." Next to its right side was a turtle carapace cup (*Terrapene carolina*).

Burial No. 35 (pl. 83) is that of an adult male. Within the thoracic cavity and in the proper position of the heart rested a crude quartzite projectile point. Below the lower pelvis and on the upper right femur rested 6 other quartzite projectile points, 2 terrapene carapaces, several disarticulated animal bones, and a rounded stone. Around the right wrist was a bracelet of shell beads. The position of the thoracic point would tend to indicate that this individual was slain and buried with some pomp, as indicated by the placement of the two carapaces in natural position, the cluster of projectile points, and the other objects of possible ritual significance.

Burial Nos. 36, 37, and 38 (pl. 85), all occupy a common grave. The bones of an adult female, a child, and an infant were intermingled. None were in anatomical order. It seems that the bones of these individuals were gathered together after the flesh had left them, together with their belongings, and dumped unceremoniously into a common hole. Mixed with the bones were a number of olivella shell beads and a few small disk-shaped *Busycon* shell beads.

Burial No. 39 (pl. 86, *b*) is that of an adult male, semiflexed, lying on his right side with head to the west. Above his right shoulder and in front of his face was a rattle made from the carapace and plastron of *Terrapene carolina*.

Burial No. 43 (pl. 86, *a*) is that of an adult male, extended, lying on his back with head pointing to the west and enclosed within an elliptically shaped grave. Resting beside the upper part of his left arm was a large carapace of *Pseudemys rubiventris* whose base rested upon a thin slab of stone. Across his left collar bone were three bone bodkins, one of which is illustrated in plate 91, *f*.

DOG BURIALS

Five dog burials were located while partially excavating the Tollifero site. Since the remains were as carefully interred as those of the humans it is deemed wise to describe these burials in detail.

Dog burial No. 1 was located when a soft spot in the primary floor of the rectangular structure, Feature 24, was investigated. Prior to the construction of the rectangular structure, a bowl-shaped pit, Feature 13, 4.0 feet in diameter and 1.5 feet in depth, was dug and later filled in with midden. Subsequently, the structure was built, the floor laid, and a hole, 1.2 feet in diameter and 1.3 feet deep, was dug through the floor. Covering the base of this pit were a number of small slabs of stone. Upon this pavement was next placed an inch of clean light-brown sand and after that the remains of the dog were placed. The body was bundled and its tail curled ventrally with the tip around its snout. It lay on its left side with its head pointing to the south. In association with the skeleton, we found the remains of *Triodopsis albolabus* (Say), *Mesodon thyroidus* (Say), and *Mesomphix cupreus* (Rafinesque). The grave was filled in with midden material and the floor repaired. This repair job was not as skillfully or carefully made as the initial packing of the floor.

The curled remains of dog burial No. 2, were intruded into an earlier midden pit beneath the floor of this same structure and rested upon a crude stone pavement. The dog's tail was curved downward with the tip resting near the nose. Closely spaced around the skeleton were a number of *Anguispira alternata* (Say), *Haplotrema concavum* (Say), *Mesomphix cupreus* (Rafinesque), *Triodopsis albolabus* (Say), *Triodopsis alternata* (Say), and *Triodopsis fallox* (Say). Whether these snails were scavengers or placed intentionally with the remains of the dog could not be determined. Dr. J. P. E. Morrison has indicated that none of these forms are flesh feeders and were probably after the lime of the bones. Within the grave fill were the remains of *Oxytrema symmetrica* (Haldeman) which were rather prevalent at the Clarksville site (44Mc14) but scarce at this site. Apparently, this shellfish was not a regular article of diet with the people of this village.

Dog burial No. 3 was found south of human burial Nos. 17 and 18, but at a higher level. The remains were found within a small vertical-sided pit 0.7 foot in diameter and 1.3 feet beneath the present surface. The bones were disarticulated and the long bones bundled together with the greater part of the vertebral column and a few ribs.

The skull was missing. Grave fill consisted of clean river sand. Associated with these remains were five Hyco Fabric-Marked sherds. Since the grave fill was sterile, this placement of sherds appears to have been one form of grave offering.

Dog burial No. 4 was found in a small vertically sided grave 1.0 foot in diameter and 0.9 foot beneath the base of the present humus. The top of the skull was lying at a depth of 1.3 feet beneath the present surface with the body curled and bent over somewhat on its left side with the head pointing to the south. We found the same types of snails associated with this dog as we found with dog burial No. 2; also recovered were two Hyco Fabric-Marked sherds. This animal was rather young when it died, for the epiphyseal unions had not been completed at the time. Skull length measured less than 5 inches; the brain case was crushed and incomplete. Although all the bones were not present, all of those found were in normal anatomical arrangement. A number of rodent tunnels were present which may account for the incompleteness of the dog's skeleton.

Dog burial No. 5 was found in an oval-shaped grave whose origin was first noted at a depth of 1.0 foot beneath the present surface. Only the skull and a few of the long bones were present. These lay scattered upon the base of the grave. Grave fill consisted of the usual midden material.

CERAMICS

We recovered 8,195 sherds from the area investigated. An examination of these sherds showed that six distinct major pottery types could be recognized (based upon these sherds rather than upon whole vessels). These are: fabric-marked, cord-wrapped paddled, plain, textile-impressed, net-impressed, and combed (pl. 87, *c–i*). Plain was subdivided into Hyco Plain and Clarksville Plain. Textile-impressed was subdivided into four subtypes: early Clarksville Textile-Impressed, Clarksville Fine Open Twilled-Impressed, Clarksville Medium Open Twilled-Impressed, and Clarksville Coarse Open Twilled-Impressed. The net-impressed was subdivided into an early type called Hyco Coarse Net-Impressed, and a later type called Clarksville Fine Net-Impressed, the distinguishing feature being coarse or fine mesh.

Those of the Hyco Series (pls. 87, 88, 89) are distinguished by having a finely divided paste to which was added a very fine sand, less than 0.25 mm. to 0.9 mm. in diameter. The paste is compact, evenly fired, lacks fire clouds, and is thin walled.

On the other hand the Clarksville Series is on a coarser paste in which larger particles of sand and some gravel appear, is contorted in physical appearance, is much darker in color due to the difference of firing methods, and is much thicker and not quite as hard.

Various exterior surfaces of some of the sherds, particularly of the Clarksville Series, were coated with a heavy carbonized crust which scaled off easily, leaving the original surfaces unaffected. It was noted that this trait had a tendency to deepen not only the surface color but that of the entire wall. This color differential gradually blended into the surrounding dark-brown areas of the untainted surface and walls.

Table 11 gives both the numerical and percental count of the basic ceramic types recovered from the Tollifero site, 44Ha6:

TABLE 11.—*Numerical and percentile count of the basic ceramic types recovered from the Tollifero site, 44Ha6*

Pottery type	Number	Percent	Pottery type	Number	Percent
Fabric-marked	6,272	76.6	Net-impressed	136	1.6
Cord-wrapped paddled	1,153	14.1	Combed	63	0.8
Textile-impressed	404	4.9			
Plain	164	2.0	Total	8,192	100.0

A further breakdown by pottery types is conveyed in table 12.

TABLE 12.—*Further breakdown by pottery types*

Pottery type	Rim sherds	Body sherds	Total sherds	Percent
Hyco Fabric-Marked	624	5,648	6,272	76.5
Hyco Cord-Wrapped Paddled	97	1,056	1,153	14.0
Clarksville[1] Fine Textile-Impressed	16	241	257	3.2
Clarksville Plain	12	140	152	1.9
Clarksville Fine Net-Impressed	15	111	126	1.5
Clarksville Open Twilled-Impressed	10	71	81	1.0
Clarksville Combed	4	59	63	0.8
Clarksville Coarse Textile-Impressed	3	46	49	0.6
Clarksville Medium Textile-Impressed	------------	17	17	0.2
Hyco Plain	2	10	12	0.2
Hyco Coarse Net-Impressed	2	8	10	0.1
Clarksville Punctate [2]	------------	2	2	------------
Clarksville Incised [2]	------------	1	1	------------
Total	785	7,410	8,195	100.0

[1] The Clarksville Series came from the surface or from the very upper level within the site.

[2] Whether this should receive a formal name is questionable.

It will be noted that the Hyco forms amount to 90.8 percent of all those found at the Tollifero site, while the Clarksville Series make up the remainder, or 9.2 percent.

Only 0.05 percent of all the sherd material came from the various pits. No unbroken vessels were recovered, but there are sufficient numbers which have been partially restored so that there is ample evidence to indicate the overall shape of the base, body, neck, and rim forms. Ollas and deep-bodied bowls are present in the collection.

A further breakdown of these figures will show the dispersal of these types throughout the village fill (table 13).

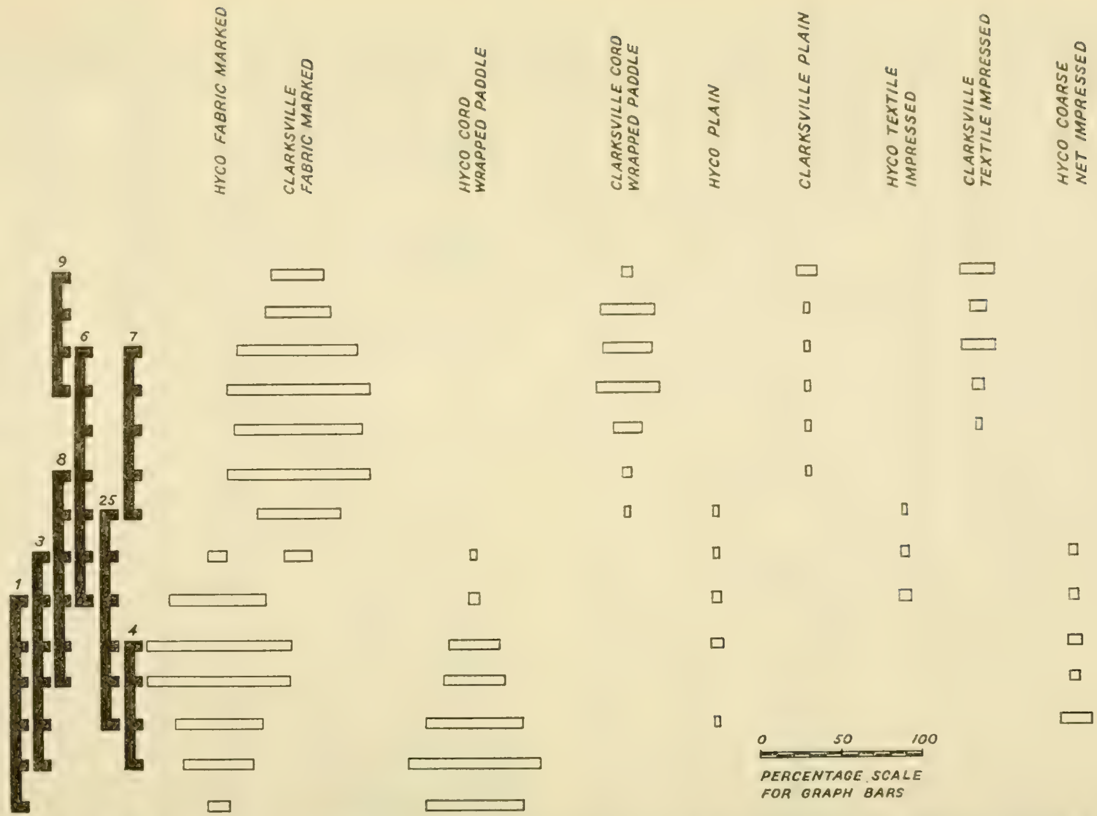

FIGURE 56.—Seriated pottery type sequence of the stratified excavations of the Tollifero site, 44Ha6. Each level is clearly distinguished by the respective ladder block to the left of the graph. The various features are shown vertically, and the pottery types are presented horizontally.

TABLE 13.—*Dispersal of types throughout village fill*

Depth from surface (in inches)	Fabric-marked	Cord-wrapped paddled	Combed	Plain	Open twilled	Textile-impressed	Net-impressed, fine	Net-impressed, coarse	Total
12–18	[1] 332 [2] 2,777	38 318	2 28	3 60	5 19	5 101	0 5	2 8	387 3,316
18–24	104 1,111	28 243	2 7	4 42	1 5	4 86	0 7		142 1,499
24–30	99 818	28 216	2 22	2 20	2 10	4 77	2 53		139 1,216
30–36	43 334	11 122		0 11	1 16	2 16	1 46		58 545
36–42	32 305	13 85		0 4	2 12	0 12	1 5		48 423
42–48	21 193	3 33		3 3	2 3	0 8	2 4		29 249
48–54	13 90	3 12		0 6	1 2	0 8			17 118
54–60				1 3					1 3
60–66				0 2					0 2
Total	6,272	1,153	63	164	81	323	126	10	[3] 8,192

[1] Rim sherds.
[2] Body sherds.
[3] Total body sherds, 7,371; total rim sherds, 821.

Lips were either rounded, rounded and flattened, or flattened. Lips may or may not be impressed with the same textiles as used on the exteriors. The upper portion of the throat may, at times, receive this same treatment. Lips have been treated with cord-wrapped paddles or impressed with fabric-marked and various types of textiles. Most lips are untreated but in a number of instances they were slashed along the outer rims and rarely along the inner edge.

From all appearance the clay vessels were initially impressed with some sort of textile during their formative period and later these impressions were either partially or completely obliterated. Textiles varied in degrees of fineness and workmanship reflecting the skill of the individual weaver. Some textiles, of the same weaving technique, show that they were carefully, competently, and compactly executed, while others of this same weave were made of larger elements, looser and more open in construction. Single elements may vary greatly in diameter. In other instances we have found that range in diameters of elements may run between 1.0 to 3.0 mm.

Practically all of the exterior surface treatments are illustrated in plates 87, 88, and 89. In plates 92 and 94 we have shown both the obverse and reverse surfaces. One will notice that the reverse surfaces of a number of these sherds display textile impressions comparable to those that appear on the obverse surfaces.

Conoidal bases occur on both the deep bowl and the olla forms. An especially fine example is illustrated in plate 87, showing the small modeled basal plate around which the vessel was constructed either by coiling or by using the fillet method.

Mending holes are present. These usually occur about 3.0 to 4.0 cm. from the rim of bowls. No instance of mending holes was found on ollas. The initial drilling was made on the exterior walls. Penetration was then carried into the walls a distance greater than half the thickness of the wall. Opposite this indentation another drilling was made to join the first. After contact was made the hole was slightly enlarged by working from the interior of the vessel toward the outer wall. Diameters of these holes varied not only on a single vessel but from vessel to vessel.

Handles and lugs are nonexistent.

OBJECTS OF STONE

Projectile points, manufactured from either chert or quartz, can be classified roughly into three main types: triangular, stemmed, and lanceolate. In the stemmed variety are a number of subtypes: vertical stemmed having slightly concave or square bases, corner tanged with square or slightly concave base, corner tanged with rounded base, side-notched with concave base, and retreating base, sometimes called beaver tailed. In the triangular variety are two subtypes: those with slight concave bases and those with slightly rounded bases.

Chipped stone artifacts are not abundant, but show considerable variety. In the lower levels chert appears to be used almost exclusively in the manufacture of these objects, while in the upper levels quartz received considerable attention. Both chert and quartz are readily available from various local deposits.

Most points exhibit coarse flake scars on the flat surfaces. A large number of the chert types indicate that they were made from large flakes which were initially cast off from a large chunk. Part of the original cortex can still be seen on one of the faces of a projectile point. Only in rare instances are the points secondarily chipped. In technique and shape, the majority of these points resemble forms indicative of the late Archaic and Early Woodland. The small isosceles triangular-shaped points have been assigned to the late Woodland.

In the stemmed varieties, the lengths vary from 2.5 cm. to 7 cm. The greatest width, which appears at the shoulder, varies from 1.7 cm. to 3.5 cm. Maximum thickness varies from 4.0 cm. to 6.0 cm. and occurs in the vicinity of the greatest width which is well above the bit. In the corner-notched specimens, the greatest length varies from 3.0 cm. to just a trifle over 7.0 cm. The greatest width is in the vicinity of the bit and this varies from 1.5 cm. to 3.0 cm. according to the overall shape of the individual specimen. In the lanceolate forms, the greatest length varies from 1.8 cm. to 7.3 cm. The greatest thickness, like all the others, occurs in the vicinity of the greatest width.

Some *digging tools* (pl. 87, *a*, *b*) were shaped by percussion chipping, while others were just natural forms of stone. Usually these are elliptical in outline with the broadest section serving as the blades. Practically all are oval in cross section and are of either granite or slate. The working edge is not ground intentionally, but there is a slight amount of polishing which has resulted from actual use.

Hammerstones are present in various shapes. Some are just common waterworn stones or hardheads of a type which can easily be picked up at random along the river's edge. These usually display a number of battered surfaces. In no instance was the original stone altered in shape through abrasion or chipping. Next are the flat stones with slight cup-shaped depressions on one or both sides. Such stones may be either round in outline or irregular in shape.

Nutting stones (cupstones, anvil stones) are usually flat and have one or more shallow cup-shaped depressions on either one or two sides.

Stone balls, varying in diameter from 3.0 cm. to 5.0 cm., are either naturally worn hard heads or they were pecked into this shape. None of them are highly polished. They may have functioned as bolas but it is considered best to state that their functions are problematical.

Slate appears to be one of the choice types of stones utilized by the aborigines of this site. We found thin sections, notched along one or more edges, which may have functioned as saws. Other sections were made into pendants, while still others functioned as digging blades.

Stone saws were either fine or coarse toothed. Other slate objects are shown on this same plate. None of them display the typical groove or grooves attributed to grinding stones.

A unique banded slate gorget was found in this site (pl. 90). It is roughly diamond shaped in outline and unperforated. Whether it was destined to be perforated later can only be surmised. Plate 90, *g*, shows to a certain extent the technique used to fashion objects such as this. The crude chipping scars outlining the gorget plainly show that percussion was first used to cast off the rough unwanted portions of the stone to outline the desired object. Plate 90, *f*, shows that the rough edges have been greatly ground down almost obliterating all traces of percussion and that the general outline has been refined. Plate 90, *i*, shows a fragment of a narrower, diamond-shaped gorget, while *h* indicates the blunt tip of another bar-shaped gorget.

OBJECTS OF BONE, ANTLER, AND TURTLE SHELL

While raw bone material was rather plentiful, the Indian made very little use of this medium in the manufacture of artifacts. We did find that they used splinters of bones which were altered sufficiently to function as drills. Only the barest of work was performed on the bone to convert the splinters into awls or drills. We found that they would take the cannon bones of deer, elk, and fox and after battering off one end they would leave the articulative surface on the other end and change the damaged portion into awls. These were always carefully finished tools.

Bodkins (pl. 91, *f*), on the other hand, were rather well made. They were fashioned from the rib bones of deer or elk. They were roughly triangular in outline with an expanded perforated base. In some instances the outer margin or margins bear slight grooves in the way of decoration. Both awls and bodkins are illustrated in plate 91, *e–h*.

We found a number of *beaver incisors* which were split and used as chisels.

Antler tines from both the deer and elk were converted into flaking tools. We found that tines from the brow, bay, and the royal antlers were severed from the main branch and were used for these tools. It was only seldom that we found that the sur-royal or crown tines were used.

Plate 91, *a*, *b*, shows both an unaltered deer's mandible and one that had been cut, ground, and perforated. The cut jaw was recovered from the general midden area so that we cannot positively designate its cultural provenience with respect to the other material cultural remains. We were not as fortunate as Dr. Webb (1928, p. 275), who found the remains of an aged adult male bearing a headdress of 12 cut animal jaws arranged in a double row around his head. Webb made no attempt to interpret his find.

On the lower left-hand portion of the *cut deer's jaw* from the Tollifero site there is a perforation which only went through the outer bony portion leaving the inner section untouched. At the base of the ascending ramus there is another perforation which had worn through. This indicates another point of suspension. Both holes were a means of attachment; whether worn suspended as a gorget, in which case the teeth hung downward, or attached to a headdress of some sort cannot be determined, since we found no other worked specimens in any of the other sites investigated within the reservoir basin. We have found deer jaws which were partially roughed out in preparation for shaping into objects of this sort but, outside of the single finished product, none were completed.

The carapace of *Terrapene carolina* was used for a number of purposes. Some were converted into scoops or handleless ladles, as illustrated in plate 91, *c*; others served as containers or dishes (pl. 91, *d*); others were converted into rattles; while the majority were probably used religiously as totemic symbols, since they were inserted into the graves in such a position that they could not possibly have served as containers or receptacles. A number of *Pseudemys rubiventris* carapace occurred in direct association with various burials. These did not serve as containers either and were probably used to indicate totemic affiliations. We found a number of fragments of *Terrapene carolina* and *Terrapene bauri* carapace in the midden. This would indicate that both of these animals were used as articles of diet.

OBJECTS ATTRIBUTED TO THE WHITE MAN

Superimposed over the Indian remains or inserted within their cultural deposits were various objects attributed to the white man's culture (pl. 90, *a-e*). These can be roughly subdivided into four main categories: (1) those made of iron, (2) those made of brass, (3) those made of glass, and (4) those made of clay.

Among the iron objects are various types of iron knives, square-cut nails of various thickness and lengths, bars which show that they were either hooks of some sort or were portions of discarded tools, rods, horseshoes, sections of chain, staples, buckles of various types, padlocks, spoons, wire nails of various sizes, kettle fragments, and a fragment of fire tongs. None are especially diagnostic of a definite time limit but they do indicate a certain passage of time through a change in nail tradition, change in padlock style and type, and the type of buckles used on horse's harness.

The brass objects are much more interesting and give us some indication of a time relationship. Among the brass objects recovered are base plates for drawer pulls, shoe buckles, trouser or knee buckles (pl. 90, *a*, *b*), thimbles (pl. 90, *c*), straight pins, buttons of the disk type with a welded iron loop for attachment, and the basal portion of a kerosene lampwick holder. The latter was part of a wick assemblage of the type universal in homes around 1860 or thereafter. The presence of both the brass shoe and knee buckles would indicate a date between 1780 and 1800, since shortly thereafter the fad of wearing buckles in these positions became passé.

Among the glass fragments we were able to identify the following: kerosene lamp chimneys of the heavier type, medicine bottles, rum bottles, spirit bottles, Alka seltzer bottles, basal portion of what might have been a drinking glass or a similar container, window panes of varying thicknesses, and even a Coca-Cola bottle fragment or two.

A number of pearl buttons were recovered. Most of them are of the four-hole variety and measure roughly 1.1 cm. in diameter. A single large button, 2.4 cm. in diameter, was included in this lot. This particular button was cut from a shell with the crude outer portion of the natural shell still on the reverse side. The holes for attachment were included in a large central well, most of which was broken away.

We also found a few of the smaller four-holed china buttons. These were of the same size as the smaller pearl variety.

Clay objects were subdivided into: (1) chinaware, (2) stoneware, (3) clay pipes (pl. 90, *c*), and (4) doorknobs. Various types of chinaware were in the lot; most of these were found incorporated within the humus layer, while a few were found in some of the trash pits dug by white man. There were portions of plates, cups, saucers, and bowls. The paste is a dead white. Some have harder paste than others, and the thickness of the glaze, which occurred on both surfaces, varies from very thin—which resembles a wash—to fairly thick. On some the glaze is crackled, while on others this characteristic is lacking. Color of decoration ranges from a light blue to deep cobalt blue, to brownish green and black, all on a white background.

Staffordshire vessels were fairly numerous. These were decorated with a pattern in rich warm brown. Apparently pieces of a common set were broken and discarded. Imprinted on the basal portion of a single sherd is the following maker's mark:

Anthony Shaw & Co.

England Warranted

In William Chaffers' (1946) section on "Staffordshire," we found an Aaron Shaw listed for the town of Burslem in or about 1750. Whether Anthony belonged to this same family or had his own works is not known. This information was taken from "Ward's History of the Burgh of Stoke" (1943). E. Brunt of Hanley (1802) listed a "Charles Shaw, packer and dealer, Tunstall" as "Trades in connection with Potters in 1802." In 1837 Dr. S. Shaw brought out a book on the "Chemistry of Porcelain, Pottery, and Glass." Apparently the Shaws were rather active in the manufacture of Staffordshire ware from an early date, and Anthony Shaw was a later addition to the list of pottery makers of that family, either directly or indirectly related to the aforementioned men.

The stoneware from this site is of two colors, a grayish and a brownish ware. In both the paste is hard and very homogeneous in character. The bisque was given the desired color treatment and later a salt glaze was developed. Crocks and heavy-duty bowls were made of this ware and were in use around kitchens and milk houses.

Pipes of the kaolin type (pl. 90, *c*) are indicated mostly by fragmentary pipestems. Bowl sections are extremely rare. All of the bowls recovered are spurless. Bowl diameters measure 13/16 of an inch across the mouth. From the base of the bowl to the rim, outside measurements average $^{13}/_{16}$ of an inch. The inside of the bowl is well blackened indicating long usage.

To account for the numerous sections of pipestems, it has been assumed that there was a practice that each smoker indulged in when using pipes which were more or less common property. Before each smoker used the pipe he would break off a small section of stem to assure a clean bit. In this way the stem was gradually reduced in length until it was far too short to smoke comfortably without burning the lips of the smoker. When a pipe had its stem reduced to this state it was no longer useful and hence it was discarded.

Among the white man's pipes are those manufactured in molds and burned to a dull orange-hued red. These pipes were made so that a wooden or a cane stem must be inserted into the short clay stem so that they could be smoked. On the stem of this particular specimen a word was impressed into the clay before it was fired. I can make out the first letter "H"; then there are a couple of blurred letters which, in turn, are followed by four distinct letters "CINN." Whether this is supposed to indicate the maker's mark or the locality of the pipemakers is not known.

The stem portion measures 1 inch along the top of the stem, which joins the bowl at almost a right angle. It is octagonal in cross section. The hole at the bit end of the stem measures $\frac{13}{32}$ of an inch in diameter and as it enters the bowl section it tapers down until it terminates with an opening $\frac{2}{32}$ of an inch in diameter where it enters the base of the bowl.

All pipes are of the late 18th century.

A little over a half of a clay doorknob was found. The paste used in the knob is variegated, ranging in color from a brick red to a tan, which brought about the mixture of two separate types and colors of paste loosely mixed. The clay was placed into a two-sectioned mold as indicated by the mold line around the rim of the knob. It was then fired and later smoothed, but not sufficiently to remove all traces of the mold. Next it was given a coating of a brownish glaze which intensified the variegated clays underneath. Later an iron shank was inserted into the clay knob and a lead seal was used to weld the two together.

TRAIT LIST OF SITE 44HA6

SUBSISTENCE ACTIVITY:

- *Collecting Complex:*
  - Collecting wild nuts, berries, and grass seeds
- *Hunting and fishing complex:*
  - Deer, elk, bear, raccoon, opossum, rabbit, turkey, waterfowl, foxes, squirrel, etc.
  - Fish
  - Shellfish
  - Domestic dog

COMMUNITY PLAN ACTIVITY:

- *Village location and plan complex:*
  - Village located on island
  - Village located near stream
  - Village located on high point of island
  - Deep midden

Community plan activity—Continued
- *Village location and plan complex*—Continued
  - Numerous midden pits
  - Hot stone cooking
  - Fire-cracked stones in debris
  - Area reoccupied by later white man
  - Introduction of white man's trash pits
  - No well defined burial area
- *Architectural complex:*
  - Large rectangular structure indicated

Ceremonial activity:
- *Burial complex:*
  - Circular graves
  - Oval graves
  - Flesh burials (inhumations)
  - Single burials
  - Multiple burials
  - Disturbed burials
  - Bundle burials
  - Partial cremation
  - Skull burial
  - Extended burials
  - Flexed burials
  - Semiflexed burials
  - Head direction variable
  - Burials with ornaments
  - Burials with utility artifacts
  - Grave goods scanty
  - Grave goods absent
  - Grave goods, *Busycon* shell beads
  - Grave goods, *Olivella* shell beads
  - Grave goods, milk teeth of elk
  - Grave goods, projectile points
  - Grave goods, bone artifacts
  - Grave goods, perforated canine teeth
  - Grave goods, terrapene carapace
  - Grave goods, terrapene carapace rattle
  - Burials with steatite objects
  - Burials with turtle carapace as totemic emblems
  - Dog burials
- *Pottery complex:*
  - Coiling
  - Modeling
  - Pottery in all levels
  - Pottery, sand-tempered
  - Rims and lips usually simple
  - Some pseudo-rim strip and tip ticking during later phase
  - Net impressed
  - Cord-wrapped hand impressed
  - Fabric marked
  - Textile impressed
  - Plain
  - Punctate

CEREMONIAL ACTIVITY—Continued
- *Rough stone complex:*
  - Hammerstones, natural hardheads
  - Hammerstones, rough discoidals
  - Hammerstones, pitted
  - Mortars, flat, saucer-shaped depressions
- *Chipped stone complex:*
  - Projectile points, lanceolate, chert
  - Projectile points, stemmed, chert
  - Projectile points, stemmed, quartz
- *Ground stone complex:*
  - Gorgets, bar, two hole
  - Gorgets, diamond-shaped
  - Steatite pots, miniature
  - Hoes
- *Bone complex:*
  - Cut antler sections
  - Antler drifts
  - Antler flakers
  - Forked deer ulna
  - Awls, splinter type
  - Awls, deer ulna
  - Awls, small animal ulna
  - Tubes, cylindrical
  - Bodkins, triangular, perforated base
  - Deer jaws, cut, perforated, smoothed
  - Deer jaws, cut, unperforated, unfinished
  - Perforated canine teeth
  - Unperforated bear canine teeth
  - Turtle-shell spoon
  - Turtle-shell rattle
  - Turtle-shell, emblematic
  - Split beaver's teeth, chisels
- *Shell complex:*
  - Beads, small, disk-shaped
  - Beads, marginella
- *Fiber complex:*
  - Cord, clockwise twist
  - Fabric, inferential from impressions on pottery
  - Coiled baskets
  - Twined bags

SUMMARY

It would appear, from the above study of the tangible remains of stone and pottery, that this site had its beginning during the Transitional Period between the Archaic and very Early Woodland, merging into the general Woodland pattern and terminating with the advent of Middle Woodland times. Homogeneity of paste coupled with that of exterior surface treatments exhibited upon simple deep bowls and ollas appears to bear this out.

GRASSY CREEK COMPONENT

(44Mc53)

Directly east of the confluence of Grassy Creek and the south bank of the Roanoke River is a fairly large and important site (44Mc53). Under normal conditions it rests 22 feet above the normal river level and upon a primary terrace covering an area approximately 500 feet long and 200 feet wide, roughly parallel to the river, so that it lies in a north-south direction (fig. 57).

Our first testings were begun along its western perimeter and we found the cultural remains here to be rather lean (area 1). Shifting our position more to the east to Area 2, a distance of 35 feet, we put down another series of test pits. This time we found the cultural remains to run much deeper and to get to the cultural layer we had to remove a sizable overburden. During this testing we uncovered the remains of a few midden pits.

Instead of being circular in outline and well regulated, these pits were of the rambling type with an irregular outline. Carefully searching through these pits we discovered that there was no uniformity of depth. Instead, the bottoms of these pits were more or less undulating; some portions deeper than others.

In this same area we located the remains of an old erosional ditch whose presence did not manifest itself upon the present surface. It started somewhere to the southwest of the site and ambled in a northeasterly direction toward the Roanoke River. The old ditch was completely filled with accumulated midden material, gravel, and sand. This ditch was traced for a distance of 20 feet (fig. 58).

Before we were through with this site we had investigated a third area 40 feet square, the whole taken down to sterile red clay, which formed the underlying bed.

Upon completion of the investigations in Area 2, we moved another 30 feet to the east where two exploratory trenches, 5 feet wide and 20 feet long, were established so that they crossed each other about midway. The first trench ran roughly east and west and the second trench roughly north and south.

The east and west trench demonstrated that the farther east we proceeded the leaner the deposits became. With this in mind we determined to test the northern extent of the deposit by running a trench across this one.

Starting 25 feet north of the first trench we headed in a southerly direction, thereby bisecting the east and west trench. Just north of the intersection of the two trenches we ran into a small burial area. When enlarged, we uncovered the remains of five burials and noted that the midden was much thicker here than that indicated to the east.

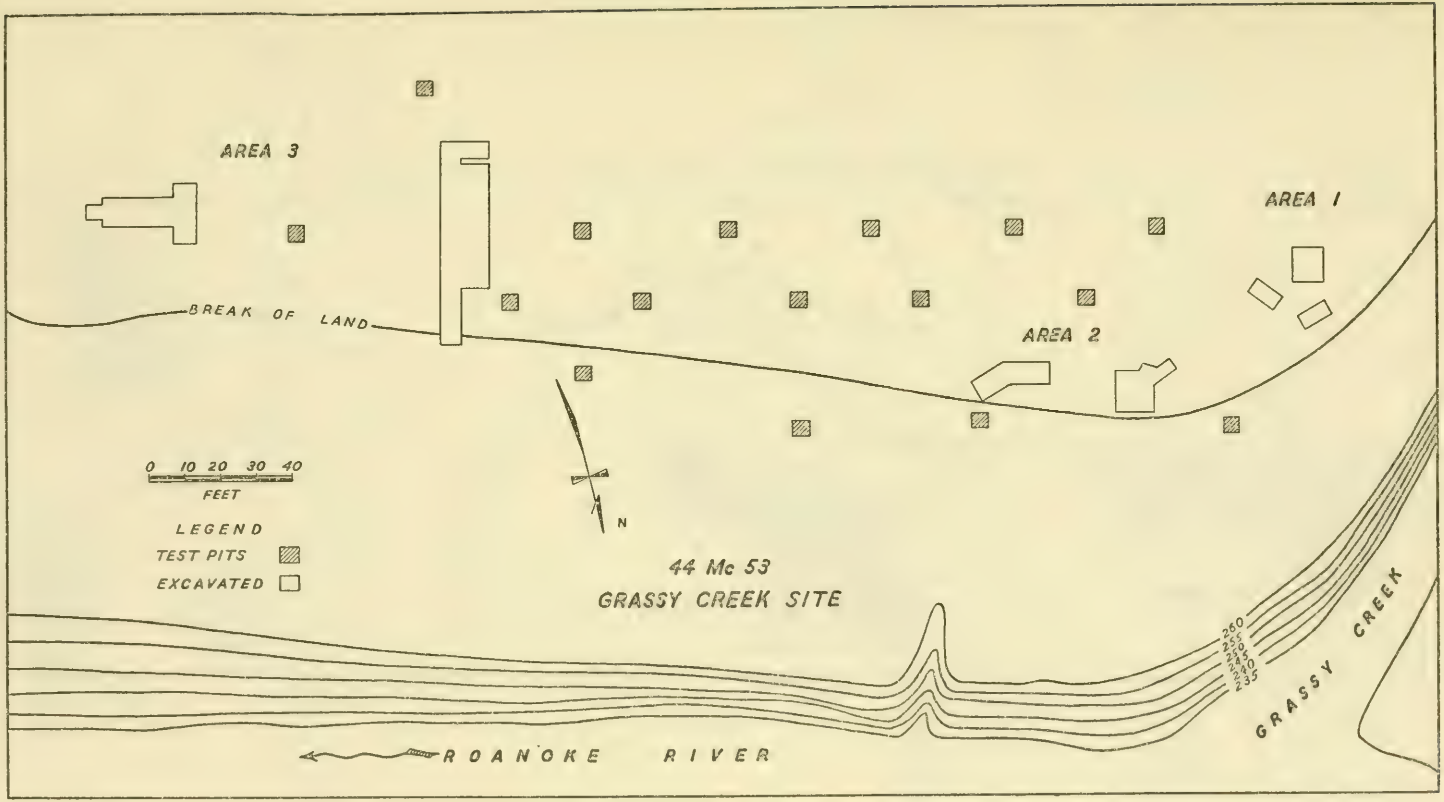
AREA 3
AREA 1
AREA 2
BREAK OF LAND
0 10 20 30 40
FEET
N
LEGEND
TEST PITS ▨
EXCAVATED ☐
44 Mc 53
GRASSY CREEK SITE
260
255
250
245
240
235
GRASSY CREEK
ROANOKE RIVER

Figure 57.—Areas explored in the Grassy Creek site, 44Mc53.

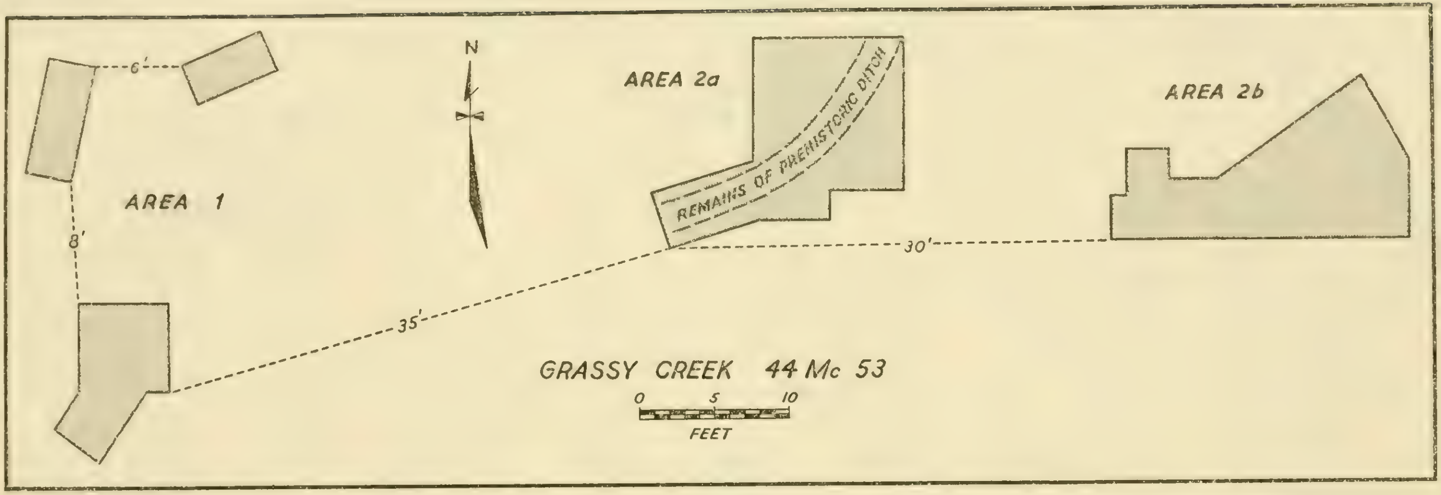
6'
N
AREA 2a
REMAINS OF PREHISTORIC DITCH
AREA 2b
AREA 1
8'
30'
35'
GRASSY CREEK 44 Mc 53
0
5
10
FEET

Figure 58.—Main areas explored in the Grassy Creek site, 44Mc53.

All of the burials were badly decomposed. At the present time the graves were fairly shallow, being a foot or more beneath the present surface. After carefully uncovering the remains we found that all were flexed; head direction was not uniform, neither was the placement. Some lay on their left sides, others on their right sides, while one was placed upon its back. We found no burial offerings or bodily ornaments with any of them.

We found that burial No. 1 was the best preserved of the lot. It was placed into an oval-shaped pit. This pit rested directly above two earlier midden-filled pits (fig. 59).

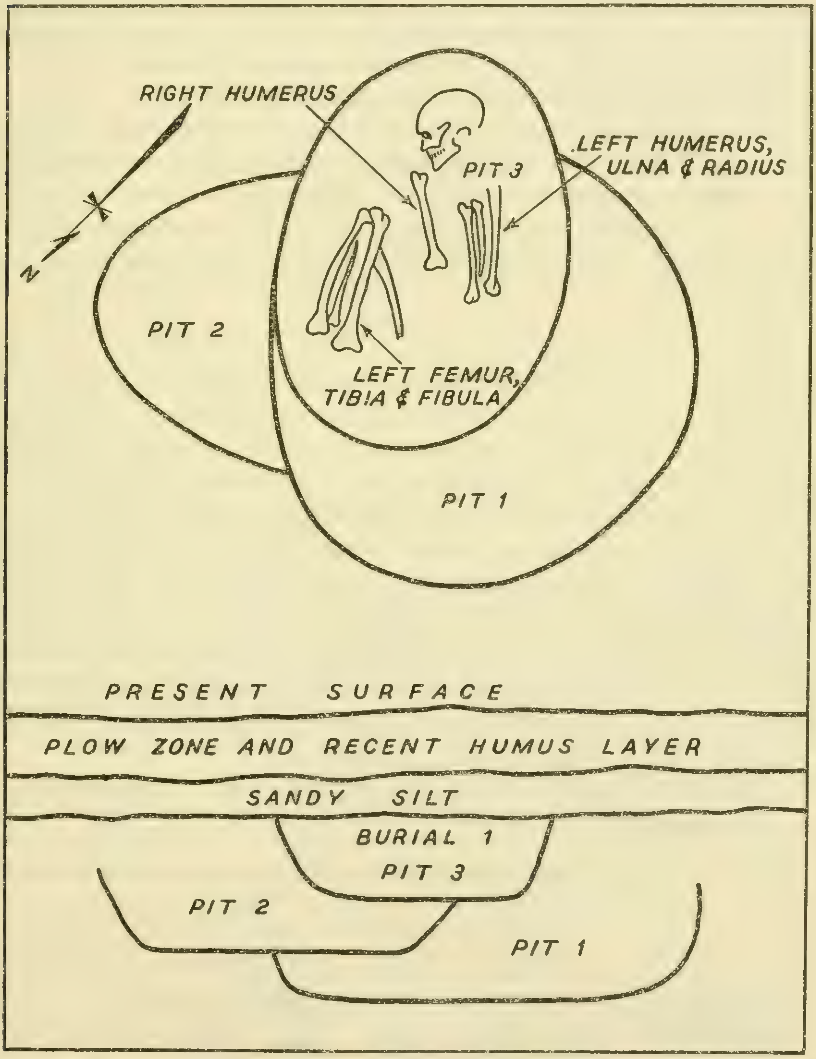
RIGHT HUMERUS
LEFT HUMERUS, ULNA & RADIUS
PIT 3
N
PIT 2
LEFT FEMUR, TIBIA & FIBULA
PIT 1
PRESENT SURFACE
PLOW ZONE AND RECENT HUMUS LAYER
SANDY SILT
BURIAL 1
PIT 3
PIT 2
PIT 1

Figure 59.—Details of the combined features: Pits 1, 2, and 3, with intruded burial No. 1 within Pit 3, Grassy Creek site, 44Mc53.

Cross sectioning these two pits we found that the deeper pit was the earlier. It was encroached upon by a shallower midden pit, which in turn was encroached upon by the later burial (fig. 51).

With our extensive investigation of this site we found no evidence of any habitations. We found no post molds even though the cultural deposit rested directly upon a nearly flat bed of red clay. We can only postulate that the shelters must have been rather flimsy structures not to have left any impression either in the midden-covered zone or in the underlying red clay.

We managed to locate a number of burned areas within the midden deposit which we called hearths. There was no evidence that there were any prepared floors surrounding such areas. Some of the hearths contained fire-broken stones mixed with ashes. Other similarly broken stones were found scattered throughout the midden.

Animal remains were scarce, and bone artifacts were just nonexistent. While we found various types of awls, beamers, and bodkins in the other sites, this one did not yield a single bone tool. From this fact we might conclude that these people were primarily food gatherers living off the natural fruits, seeds, and tubers the vicinity would yield.

POTTERY

The site showed no actual stratigraphy. First, we removed the cultural layer in 3-inch levels and later changed this to 6 inches, thinking that we might work out possible seriational studies which would indicate any cultural change that had taken place at this site.

Of the 3,871 sherds recovered by our efforts, we were able to separate the lot into seven different wares, depending upon their exterior surface treatment. All of the sherds were sand tempered. The quantity varied somewhat which gave us a clue as to time placement, but this was not absolute, since we had to take into account certain individual likes and dislikes of the potters. Olla forms predominated while the wide-mouthed, parallel-sided, conoidal-based bowls, both typical of the Eastern Woodland culture, were present.

Table 14 indicates both the numerical count and the percentages of each type present.

TABLE 14.—*Numerical and percentile count of the various wares recovered from Grassy Creek Site, 44Mc53*

Pottery type	Number	Percent	Pottery type	Number	Percent
Fabric-marked	1,018	26.3	Net-impressed	42	1.1
Cord-wrapped paddle	1,015	26.2	Open twilled-impresssed	12	.3
Textile-impressed	794	20.5			
Combed	640	16.5	Total	3,871	99.9
Plain	350	9.0			

The studies revealed that both the fabric-marked and cord-wrapped paddled wares were well developed and established when this site was first settled. The early inhabitants knew the principles of impressing textiles and combing the exteriors of their vessels.

A further breakdown, according to levels, showed that our deepest gave only those types associated with the Hyco Series. Midway in the deposit a new ware—coarser, sandier, thicker, and not as well made—appeared which resembled the early Clarksville Series as established at the Clarksville site, 44Mc14. This intrusive ware rapidly gained in prominance and soon the Hyco types disappeared altogether just before the site was abandoned.

Hyco Fabric-Marked, Hyco Cord-Wrapped Paddled, Hyco Plain, and Hyco Textile-Impressed were all well known to the first settlers of this site, and Hyco Fabric-Marked was then the dominant ware, to be followed by Hyco Textile-Impressed, Hyco Cord-Wrapped Paddled, and Hyco Plain, in the order of their popularity.

Shortly thereafter a combed ware, with a Clarksville type paste, was introduced, but this never became very popular and was only manufactured in sufficient quantity to indicate that various potters were cognizant of this technique.

Not long after the combed ware was introduced, a change was being felt by Hyco Textile-Impressed, as there was starting to be a change in both type of paste and firing methods—methods that were in keeping with the incipient combed ware and in accordance with the typical Clarksville affinities. Both Hyco Cord-Wrapped Paddled and Hyco Plain conformed to this changeover and were later adopted by Hyco Fabric-Marked. With this altering of paste characteristics and methods of firing the Clarksville Series was established in the site.

From this we infer that there must have been a peaceful infiltration by a group of aliens who amalgamated with the Hyco group and assimilated them sufficiently to bring about the crucial changeover in the basic methods of pottery-making, but their influence was not strong enough to completely divorce stylistic treatments of exteriors.

From the various illustrations of pottery (pls. 92, 93, 94), it will be noted that the initial Hyco Series characteristics still hold true and that rim treatments show no variation but all conform to the norm already established. The adoption of the psuedorim strip noted in the Clarksville Series was first noticed after the conversion was completed.

The coiling technique was employed to form the vessels and juncture was not always obliterated, as shown in plate 92, *g′*.

One sherd of much interest is shown in plate 93, *c*. This is the basal section of an olla showing that the vessel was started by placing a pat of clay within a coiled basket and pressing it into the desired shape. Next, a series of coils was added to give height to the walls and to achieve the desired shape. When completed the molded portion was smoothed, obliterating any trace of the basket impression, but the area immediately above still retained the impressions of the basket container. This piece indicates two facts: (1) that two methods were used in the manufacture of clay vessels—molding and coiling, and (2) that coiled basketry was not only manufactured and used as containers but as the foundation in which clay vessels were started.

Obtuse-angled clay pipes were in use (pl. 93, *f*) by the people who lived on Grassy Creek. In making pipes of this type they resorted to a very homogeneous clay which apparently was chosen with more care than that given to the clay out of which they fashioned their clay vessels.

What may have been the remains of a smoking tube (pl. 94, *h*, *h′*) was fashioned from the same type of clay that was used in the manufacture of their clay vessels. It is crudely shaped with very thick walls and the peforating tube is rather large in diameter. Sand particles are large and prominent. Only the basal portion of this tubular pipe was recovered.

Two unusual clay objects (pl. 93, *g* and *h*) were recovered. One, *h*, appears to be some sort of handle, probably from a miniature toy vessel, the other, *g*, is a small object, round in cross section, fired to a tan color, and is heavily tempered with sand, some of which shows on the exterior. What purpose such an object could have served is problematical.

CHIPPED STONE

A number of chert chips and a number of microlithic artifacts, which were fasioned from chert chips, were found scattered in the sand and gravel layer at the base of the erosional ditch. Upon examination, these proved to be well-defined microlithic artifacts, which are illustrated in plate 95, *a–f*, as well as in plate 96, *m* and *n*. Some are in the form of delicate scrapers, *f*; others are types of burins, *b*; still others appeared to be gravers of the style associated with Paleo-American remains, *c–e*; and one has been carefully chipped with rather delicate chips along one side, while the end and opposite side present a splendid cutting tool, *a*.

Associated with these microlithic artifacts and chert chips were two very small isosceles triangular points, illustrated in plate 96, *m* and *n*. These were the only two projectile points found at this level of the sand-gravel deposit.

Among those found higher in the midden material were two typical Woodland projectile points. One is roughly pentagonal in outline (pl. 96, *l*), the base is slightly concave, and the adjoining sides flare but slightly and then sharply constrict, terminating in a blunt point or tip. This particular point was fashioned from a large thin chert chip, one side of which shows very little chipping while the side illustrated received the major attention of the maker. On this surface there is slight evidence of secondary chipping along the edges.

The second point, much smaller than the one just described, is thicker and of an entirely different shape. This point has a beavertail-shaped base, sloping shoulders, and a triangular body terminating in a fairly sharp tip (pl. 96, *q*). While chipping is much cruder, each chipping scar indicates that the one who made it knew what he was doing and used only the very smallest number of strokes to make the point.

Overlying the sand and gravel layer were a number of crude chert and rhyolite Woodland artifacts. Most of these were projectile forms but a few scrapers were among them. These are illustrated in plate 96, *a–h*, *j* and *k*. With the exception of point *k* all were crudely made, mostly by percussion. Very little secondary chipping was used to complete any of these points. Point *k* is not only a better made artifact but it is symmetrical in outline due to the fact that it was carefully secondarily chipped, making its outline fairly regular.

In the very upper portion of the cultural debris there were comparatively large numbers of thin triangular projectile points of a type assigned to late Woodland horizons. Both chert and quartz forms are present (pl. 96). Some are very crudely shaped, much thicker, longer, and broader than the smaller and better made points. Bases are either straight or slightly concave. In some instances there appears to have been some attempts made to thin the basal section but this is not uniform in practice. Some were secondarily chipped, best illustrated in plate 96, *j*. The two small points, *m* and *n*, in this same plate, are complete, with the exception of a single shoulder missing from blade *m*, and belong to a much earlier cultural horizon.

It will be noted that there is considerable size range among the triangular points. Plate 96 illustrates both types.

Drills are usually made of chert. Two general shapes, depending upon the shape of the base, were noted. One has an expanded base, as illustrated in plate 96, *o*, and while the other is more on the T-shaped form, plate 96, *p*, it is fairly thin, having been chipped from both sides forming a central ridge down the center of the artifact.

Drilled fragments of steatite sherds were also present in the deposit. A number were found throughout the upper midden deposit; whether these were a form of gorget or small net sinkers, possibly both, could not be accurately determined.

TRAIT LIST

SUBSISTENCE ACTIVITY:
- *Collecting complex:*
  - **Collecting wild nuts, berries, grass seeds, etc.**
- *Hunting complex:*
  - **Deer, rabbit, turkey**

SUBSISTENCE ACTIVITY—Continued
- *Hunting complex*—Continued
    - Fish
    - Shellfish

COMMUNITY PLAN ACTIVITY:
- *Village location and plan complex:*
    - Located at confluence of creek and main stem
    - Located near stream
    - Located on high point well above periodic flood stages but below present pool level
    - Midden deep in spots
    - Midden pits scattered
    - Evidently cooked with hot rocks
    - Fire-cracked and/or broken rocks found scattered throughout the area investigated
    - Burial areas not confined but scattered

CEREMONIAL ACTIVITY:
- *Burial complex:*
    - Oval graves
    - Single burials, and in the flesh
    - Semiflexed burials, and in the flesh
    - Head direction variable
    - Grave goods absent

INDUSTRIAL ACTIVITY:
- *Pottery complex:*
    - Coiling, the main system used in the manufacture of pottery
    - Modeling used secondarily in the manufacture of pottery
    - Pottery found only in the upper levels within the site
    - All pottery sand tempered
    - Rims and lips usually kept simple in form
    - Exterior surface treatments:
        - Fabric marked
        - Cord-wrapped paddled
        - Combed
        - Textile impressed
        - Plain
        - Net impressed
        - Painted
    - Clay pipes
- *Stone complex:*
    - Chipped stone in the lower levels:
        - Microlithic scrapers
        - Microlithic gravers
        - Microlithic projectile points
        - Microlithic burins
    - Chipped stone in the upper levels:
        - Stemmed Woodland projectile points
        - Triangular Woodland projectile points
        - Drills
        - Scrapers
    - Rough stone:
        - Hammerstones, natural hardheads
        - Hammerstones, rough discoidals

OCCANEECHI COMPONENT
(44Ha5)

Fifty feet east of the old caretaker's house on Occaneechi Island are the remains of an old Indian village site. The cultural layer lies under a foot of river-deposited silt and white man's debris. The first inkling that a buried site existed here was when the adjoining garden area was explored and a number of stone chips and very small sherd fragments were seen there. Through the medium of 5-foot square test pits we were able to roughly delimit the earlier occupational area. We found material existing over an area about 75 feet in length, corresponding to the main axis of the island, and around 48 feet in width. The deposit itself varied in thickness from 3 to 9 inches depending upon the distance from the center of the deposit.

After the white man took over the island and built this house, a number of trash pits were dug which had penetrated through the earlier deposits. Into these pits he deposited shattered glass bottles, crockery fragments, bits of chinaware, metal objects of many sorts, as well as some type of organic material which had decayed, leaving behind a very dark soil.

In making our test, we found chunks of bricks, bits of lime mortar, fragments of chinaware, broken glass, bits of wire, numerous square-cut nails, buttons, sawed animal bones—mostly of cow—and an occasional Indian potsherd, all incorporated within the first 6 inches of the top-soil. In the silt and sand below this we found a number of these same objects but in diminishing numbers.

While testing the site we were always able to determine the origin of the pits dug by white men for they came very close to the present surface, while those dug by the Indian were only found after the silt and sand were removed. Those of Indian origin were not truly pits but rather slight depressions in the surface upon which they lived.

We found no evidence of any burials, house structures, or other features pertaining to the Indian occupation.

Because of this rather heavy overburden and the sparsity of information gained through our testing, it was decided that it would be wise not to dig the site.

As the result of our testing we managed to recover 243 potsherds, as well as a few crudely chipped stone artifacts. An examination of these sherds allowed us to separate them into their various components. These are shown in table 15.

TABLE 15.—*Occaneechi sherds separated into their various components*

Pottery description	Number	Percent	Pottery description	Number	Percent
Clarksville Textile-Impressed	20	8.2	Clarksville Combed	44	18.1
Clarksville Cord-wrapped Paddle	86	35.4	Clarksville Fine Net Impressed	2	0.8
Clarksville Fabric-Marked	83	34.2			
Clarksville Plain	8	3.3	Total	243	100.0

From the above information we were able to determine that the people who had deposited this material lived during the Middle Woodland times at this site.

EASTER CREEK COMPONENT

(44Mc7)

Another village site (44Mc7) at 78°24′16″ long., 36°35′03″ lat., lay on the north bank of the Roanoke River above the 230-foot contour. It was about 200 feet long by 100 feet wide.

During the survey a large random collection was made from the surface because when we tested the site we found practically no depth to the deposit. Our tests showed that the actual settlement occupied only the western half of the area we measured off. Our explanation for this lies in the fact that the site had been cultivated over quite a long period of time. In plowing and cultivating, the farm tools had dragged and spread the accumulated debris over a larger area than that in which it was originally deposited.

An analysis of the sherd material revealed the following types were present (table 16):

TABLE 16.—*Numerical and percentile count of the various wares from the Easter Creek Component, 44Mc7*

Pottery types	Number	Percent
Hyco Cord-Wrapped Paddle	935	18.3
Hyco Fabric-Marked	298	5.8
Clarksville Fabric-Marked	1,453	28.4
Clarksville Combed	938	18.3
Clarksville Cord-Wrapped Paddle	920	18.0
Clarksville Plain	269	5.3
Clarksville Fine Textile-Impressed	143	2.8
Clarksville Coarse Textile-Impressed	69	1.4
Clarksville Open Twilled	41	0.8
Clarksville Fabric-Roughened	28	0.6
Clarksville Net Impressed	17	0.3
Simple Stamped	2	-------
Punctate	1	-------
Total	5,114	100.0

Associated with this assemblage were a number of quartz artifacts consisting of two small isosceles triangular projectile points, 1 medium-sized serrated isosceles point, 1 pentagonal medium-sized point, 1 large ovate point, and a rounded nodule which may have been some sort of chopper.

With the quartz-ceramic assemblages was a lump of crude clay pressed into a rough ball shape and burned. It is reminiscent of certain Poverty Point clay objects.

Besides these, there are two chert pentagonal-shaped projectile points—one is complete and the other is only two-thirds complete. Both have slightly indented bases and are lenticular in cross section. A number of other chert forms were found lower down in the site. These are fairly large, roughly triangular in outline, and crudely shaped by percussion chipping. They were not retouched along the edges.

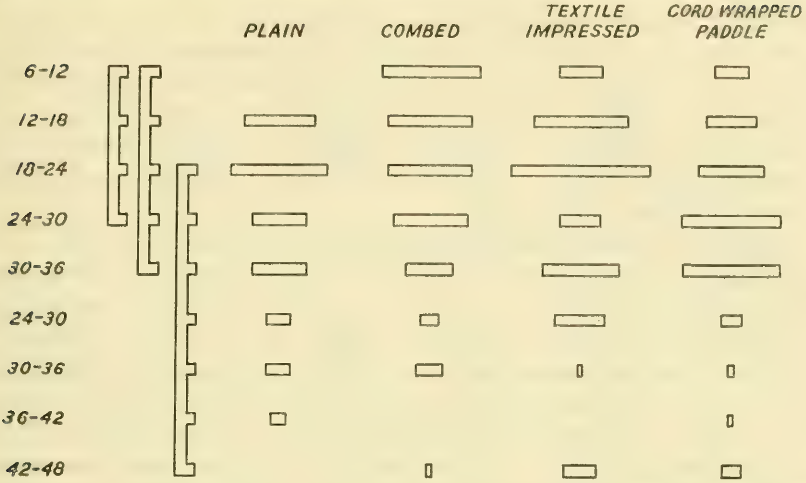

Figure 60.—Interdigitated seriated pottery type sequence of the stratified excavations at the Easter site, 44Mc7. Each level is clearly distinguished by the respective block represented to the left of the graph.

In association with these stone artifacts were fragments of two slate artifacts and an oval-shaped fragment of crude steatite which showed that it had received some use; its purpose could not be determined.

Among the Clarksville Fabric-Marked sherds were some with lips flattened before the vessel and lip portions were treated with the fabric. Other sherds which had received this same treatment showed that the fabric-marked was carried over into the throat area of the vessel. We found this same trait in relation to the textile-impressed. The distance down into the throat to which these impressions were carried varied not only from vessel to vessel but within a single vessel. In other words the impressions within the throat area were not uniformly carried into the area. It would appear that the potter handled the pliable vessel with a fabric or textile in his hand and unconsciously impressed its elements into the clay.

PAN HANDLE CREEK COMPONENT
(44Mc10)

On the north bank of the Roanoke River and 3,000 feet west of the confluence of Pan Handle Creek with the Roanoke River is a badly eroded village site (44Mc10). This site suffered severely during the flood of 1947. At that time great holes were gouged out of the area as though whirlpools played over the site.

During our initial survey we thoroughly tested the remnants of this site and found two interesting features. One was a circular pit located 3.0 feet beneath the present ground surface and slightly beyond the limits of the pottery-bearing layers. It was 1.2 feet in diameter and only 0.8 foot in depth. It appeared as a circular spot surrounded by clean yellowish-colored sand making the feature very noticeable. Upon investigation we found that it was filled with a heavily carbonized sand in conjunction with 18 fire-broken and/or cracked rocks. There was nothing else in it. This appears to have been one of their cooking pits.

The other feature was located 20 feet northwest of the pit. Here we located the remnants of a schistose slate pavement. It was composed of 97 slabs of varying sizes. In overall length it measured 5.3 feet and at its widest it measured 4.8 feet. It was found at a depth of 2.7 feet from the present surface. After being completely uncovered, we found that it had been partially destroyed by the sinking of a subsequent pit. The pit originated at a depth of 1.6 feet below the present surface and penetrated to a depth of 4.5 feet below the present surface. This pit has a slightly larger opening than our first one in that it measured a little over 2.0 feet in diameter. Like our first pit it contained only the darkened soil and bits of charcoal but no rocks or any artifacts. Going deeper we found a layer of fairly large river-worn stones which once lay in the old channel of the river. None of these were utilized by man.

It has been surmised that this schistose slate pavement once formed the crude flagstone floor of a dwelling, but after careful search of the surface of the pavement and the surrounding area we were not able to corroborate this. We found no artifacts in direct association with the pavement or under the pavement but there was a thin layer of heavily carbonized sand both on top of the pavement and in the spaces in between the individual stones.

The area explored was controlled every 3 to 6 inches and all artifacts from these levels were labeled according to the zone from which they were derived. This helped us to determine the origin of the various pottery types as they were deposited within the site. Directly beneath the ceramic-bearing zone was another devoid of any ceramic remains but containing artifacts of stone, stone chips, and badly decomposed bits of animal bones. This second zone was definitely of Archaic origin.

From an analysis of the pottery types (fig. 61), we were able to demonstrate that the site had its inception during the Hyco Period and progressed into the Clarksville stage of the Woodland before it was finally abandoned.

The first settlers used Hyco Plain almost exclusively at first. Not long afterward a cord-wrapped paddle ware was introduced and the two wares were used together. Later these two were complimented by a third ware, fabric-marked. These three wares were used all during the Hyco stage Early Woodland. Near the end of Early

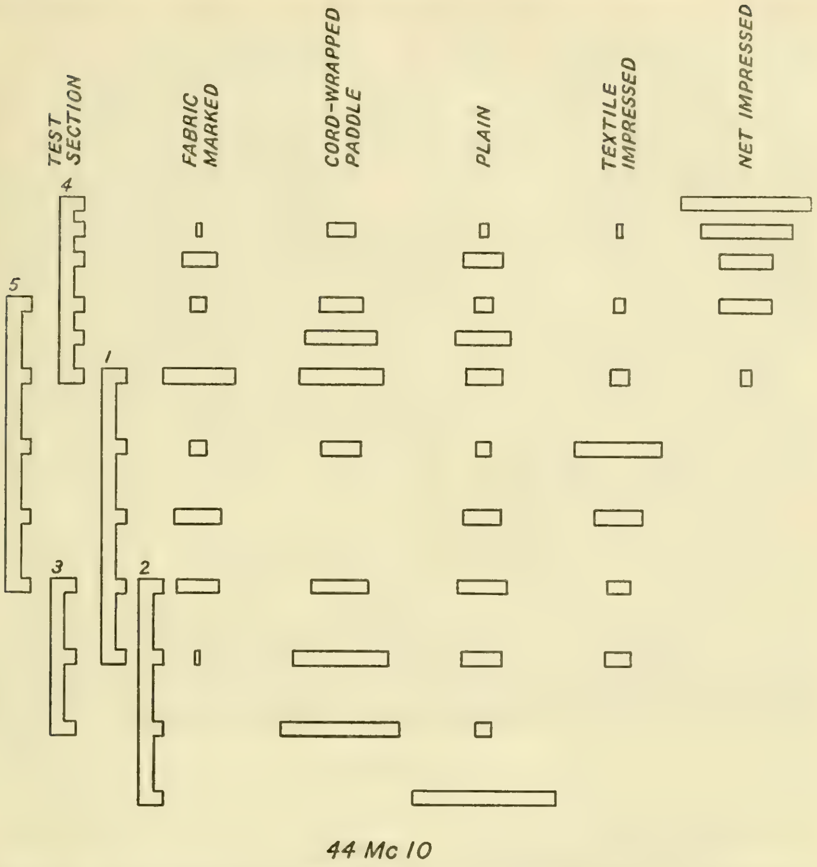

Figure 61.—Ground stratigraphy indicating trend in pottery wares for various sections of the Pan Handle Creek site (44Mc10).

Woodland we find that two other wares were being made, textile-impressed and net-impressed. These never amounted to much. Shortly thereafter Clarksville Fabric-Marked and Clarksville Textile-Impressed came in but were not popular. Popularity was gained by both the Clarksville Cord-wrapped Paddle and the Clarksville Net-Impressed so that at the close of the occupational period these two wares constituted the major wares.

In the Archaic horizon we found mostly stemmed projectile points. (The majority of these were chert but there were a few of quartz.) These forms were carried over into the Woodland horizons and a fairly large triangular form soon appeared. We found that projectile points were not numerous in either of the cultural horizons.

During the Archaic, vessels were made of steatite from either the Meherrin or Smith River deposits. Vessels were fairly large in size, round to oval in outline, thick walled, with smoothed interiors but roughened exteriors which showed many of the tool markings. Handles were confined to either the round or ovate knob or lug types. These were placed either flush with the rims or slightly below the rim. Usually there were only two handles to each vessel, opposite each other, but we found one steatite vessel with three handles. Two of these handles were fairly close to each other while the opposing handle was directly opposite one of them. Probably the maker misjudged the position of one handle or was not satisfied with it and fashioned another close to it. In order to properly balance the vessel he had to determine which handle he was to place as an opposing element. In so doing he failed to eliminate the nonfunctioning member.

Hammerstones were made of crude quartz or quartzite nodules. Both types were found in association with the nonceramic and ceramic-bearing layers. These are waterworn nodules and had very little work expended upon them. Most were battered at one end while others had both ends battered.

A number of schist flakes were found. Some were colored a reddish tint while others were undefined. One specimen with a slightly off-center depression was stained a deeper red. This may be considered as a sort of pallet or as a grinding surface where bits of hematite were ground into powder. We not only found traces of powdered hematite in the site but we recovered a number of small pieces of crude hematite that were scattered throughout the pottery-bearing layer.

TRAIT LIST

SUBSISTENCE ACTIVITY:
- *Collecting complex:*
  - Collecting wild nuts, berries, grass seeds, etc.
- *Hunting complex:*
  - Deer, rabbit, turkey, etc.
  - Shellfish

COMMUNITY PLAN ACTIVITY:
- *Village location and plan complex:*
  - Location near stream
  - Clustered without plan
  - Stone floor pavement
  - Circular firepits
  - Fire-cracked rocks in debris
  - Ceramic-bearing level
  - Nonceramic-bearing level

TECHNOLOGICAL AND ARTISTIC ACTIVITY:
- *Ceramic complex:*
  - Coiling
  - Pottery in upper levels
  - Rims and lips usually simple
  - Hyco Fabric-Marked
  - Hyco Cord-wrapped Paddled
  - Hyco Plain
  - Hyco Combed
  - Hyco Net-Impressed

TECHNOLOGICAL AND ARTISTIC ACTIVITY—Continued
- *Ceramic complex*—Continued
  - Hyco Textile Impressed
  - Simple Stamped
  - Clarksville Fabric-Marked
  - Clarksville Cord-wrapped Paddle
  - Clarksville Plain
  - Clarksville Textile Impressed
- *Rough stone complex:*
  - Hammerstones, crude hardheads
  - Fire-cracked stones
  - Use of schist flakes
  - Use of schistose slate
  - Use of crude hematite
- *Chipped stone complex:*
  - Projectile points, chert, stemmed
  - Projectile points, chert, triangular
  - Projectile points, quartz, triangular
- *Worked stone complex:*
  - Steatite vessels with opposing knobbed handles

BUFFALO CREEK COMPONENT

(44Mc17)

About 7,000 feet upstream from the confluence of Buffalo Creek and the Dan River, which is on the south bank of the river, and 300 feet northeast of site 44Mc18, opposite Oak Hill Island, is another village site.

During our initial survey we collected 238 potsherds from the surface of this site. All were gathered at random. After examining them we separated them into seven groups: 84, or 35.3 percent, were fabric-marked; 86, or 36.3 percent, were of a fine textile-impressed; 32, or 13.4 percent, were cord-wrapped paddled; 22, or 9.2 percent, were of a much coarser textile-impressed; 6, or 2.5 percent, were of Clarksville Plain; 6, or 2.5 percent, were of a fine net impressed; and 2, or 0.8 percent, were indeterminate.

At this same time we found a number of chert and quartz projectile points. Most were fragmentary but we did find a few complete specimens.

We noted that crude hammerstones were present but made no attempt to salvage any of them. All were made from nondescript hardheads and were nondiagnostic in that they could not furnish any information toward identifying the cultural group that formerly occupied this site.

It is recognized that surface indications are not truly diagnostic of the cultural assemblage but it does give the cultural picture to some extent. We recognize that only excavation can give the real picture of the cultural affinities as deposited by the aborigines over a period of time and thus allowances must be made for our data.

FIELDS ISLAND COMPONENT

(44Mc23)

At the foot of Fields Island is an extensive village site over which the Roanoke River is depositing considerable talus. Potsherds, flakes and chips of chert, chalcedony, jasper, quartz, and quartzite, as well as a few projectile forms were found scattered over the head of this talus deposit.

A series of test pits were put down in the area. From these we learned that the aboriginal deposit was rather extensive but thin. We were able to collect 1,113 potsherds from our test pits and a random collection from the surface of the site. These sherds represent all of the pottery types that were manufactured and utilized by the aboriginal inhabitants.

From a study of a topographic map made of the island by the United States Engineers, it was noted that the foot of the island is much higher than the rest of the island. This feature affords some protection from the periodic floods which occur on the Roanoke River. In times past the Roanoke River, in flood, had scoured almost bare the head of the island, where site 44Mc21 is located, and lately has eradicated all traces of this site. It was after one of these floods that Mr. William Maxey, of Richmond, Va., retrieved a number of whole vessels, some projectile points, remains of iron scissors and candle snuffers, as well as fragments of white clay pipestems and bowls.

We were unable to find any complete vessels while investigating the site at the foot of the island but we did manage to gather sufficient potsherds to enable us to determine accurately information regarding vessel shape and size.

From an examination of the paste, we were able to distinguish two traditions: the first and earliest is a paste composed of a very fine sand temper, very homogeneous, and fired to an even buff color in an oxidizing atmosphere. It is rather hard and when rapped has a certain ring to it. The second tradition is represented by a much coarser paste in which the aplastic is a much larger grain of sand with an occasional particle of grit or gravel. All these factors tend to create a contorted paste. Vessels made from this type of paste were fired under oxido-reducing atmospheric conditions resulting in black, gray, or off-buff colored vessels.

Vessels fired under oxidizing atmospheric conditions and oxido-reducing atmospheric conditions have certain "feels" about them. The former has a rather smooth feel, while the latter is rather raspy or gritty.

Here, we found a number of disks made from potsherds. They are either round, or roughly so, and undrilled. Similar ones were noted from site 44Mc14, Clarksville site, which is opposite Occaneechi Island and on the east bank of the Roanoke River.

The collection of potsherds was separated into the following wares: fabric-marked, cord-wrapped paddle, plain, combed, fine textile-impressed, medium textile-impressed, open-twilled, and net-impressed. In table 17 the 1,113 sherds have been separated, numerically and by percent, according to these various wares.

TABLE 17.—*Types of ware found on Fields Island*

Descriptive term	Number	Percent	Descriptive term	Number	Percent
Fabric-marked	375	33.7	Textile-impressed	158	14.2
Cord-wrapped paddle	256	23.0	Plain	66	5.9
Open-twilled	224	20.1	Combed	24	2.2
Coarse open-twilled (124)			Net-impressed	10	.9
Fine open-twilled (54)					
Medium open-twilled (46)			Total	1,113	100.0

Those sherds obtained from our test pits, which were taken down by arbitrary 6-inch levels, were next assembled and classified according to the established types for the overall site. Table 17 indicates their percentages from top to bottom of the pit, demonstrating how the various types were deposited upon the site.

Before the site was finally abandoned it was found that both the plain and the net-impressed wares were no longer in use. Fabric-marked, cord-wrapped paddle, combed, and medium textile-impressed were on their way out, and fine fabric-impressed remained about same. Surprisingly enough, open-twilled showed an increase and was the dominant type at the close of the site.

While testing the site we found a number of hearths, or fire-burned areas, but no other tangible indications of floor areas of houses. Whether this site was representative of a seasonal camp that was occupied from year to year could not be determined from our investigations.

TRAIT LIST

SUBSISTENCE ACTIVITY:

Collecting complex:

Wild nuts, berries, grass seeds, etc.
Shell fish

Huting and fishing complex:

Bear, deer, rabbit, turkey, etc.
Fish of various sorts native to the streams
Use of nets, inferential from impressions on exteriors of clay vessels

COMMUNITY PLAN ACTIVITY:

Village location and plan complex:

Village located on island
Clustered without plan
Fired areas with broken stones
No indications of dwellings located

TECHNOLOGICAL AND ARTISTIC ACTIVITY:

Weaving complex:

Inferential from imprints on exterior of clay vessels

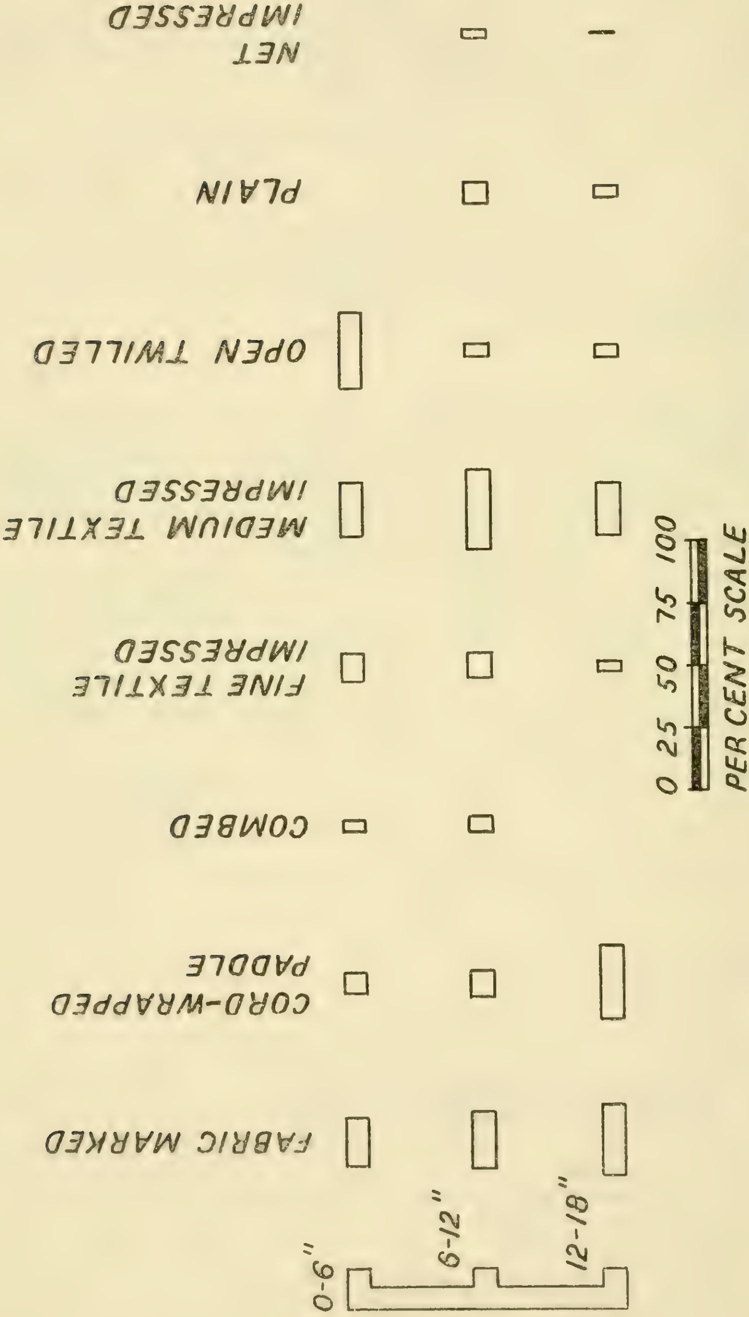

FIGURE 62.—Percentile study of the various pottery types occurring in the deposits at the Fields Island site (44Mc23).

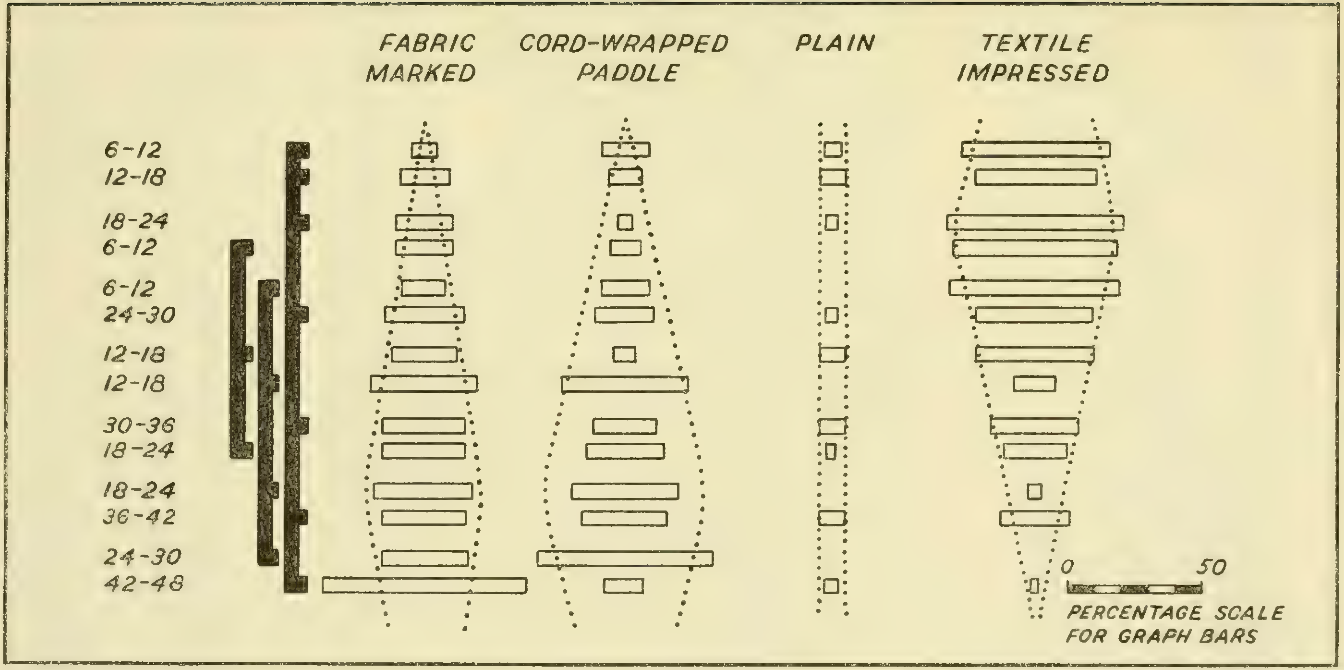

FIGURE 63.—Seriated pottery sequence of the stratified excavations of Fields Island site, 44Mc23. Each level is clearly distinguished by the respective block to the left of the graph.

TECHNOLOGICAL AND ARTISTIC ACTIVITY—Continued
  Pottery complex:
    Coiling
    Modeling
    Pottery at all levels
    Pottery sand-tempered
    Rims and lips usually simple in form
    Oxidizing atmosphere, one method of firing
    Oxido-reducing atmosphere, second method of firing
    Pottery disks
    Fabric-marked
    Textile-impressed
    Cord-wrapped paddle
    Plain
    Combed
    Net impressed

ST. JOHNS COMPONENT
(44Mc62)

Two thousand feet upstream from the foot of Oak Hill Island, 7,000 feet upstream from the confluence of Buffalo Creek and the Dan River, on the west bank of the Dan in Mecklenburg County is a small site which we have designated as 44Mc62.

At the time of our survey the site was under cultivation and so the testing was rather limited. Tests were made between the corn rows. These showed that intensive cultivation had churned up the cultural deposits and all were incorporated within the plow zone.

We managed to salvage 161 potsherds from our tests and from random collecting from the surface of the site. In the laboratory these sherds were separated into the various wares in keeping with those established for the entire reservoir basin.

Out of this number, we obtained 75 fabric-marked, 20 cord-wrapped paddle, 58 textile-impressed, 6 Clarksville Plain, and 2 net-impressed. These comprised a series which closely corresponded to another found at the Fields Island site, 44Mc23.

ISLAND HILL COMPONENT
(44Mc51)

One mile downstream from the main Grassy Creek site, 44Mc53, and on the same side of the river is a fairly large village site. When the site was first visited a crop of young corn was coming up and so our testing was again limited to the width between corn rows. This site, like that of the St. John's Component, 44Mc62, was pretty well churned up through intensive cultivation. Most of the cultural layer was incorporated within the plow zone and very little remained intact, so little that we did not recommend any further investigation.

Mostly from the sherd-strewn surface and a few from our test pits, we managed to salvage 292 potsherds. The surface collection was made at random and no selectivity was practiced.

At the time we were collecting the sherds, we noted that there was very little variation in exterior surface treatments. This was verified later in the laboratory when the collection was studied. We found that we had collected 124 plain which corresponded to our Clarksville Plain type, 123 combed belonging to this same series, and 45 textile-impressed, another member of the Clarksville Series. The heavily sand-tempered and contorted paste further corroborated our judgment in placing all of the sherd material within the Clarksville Series.

SOUDAN COMPONENT
(44Mc54)

One mile west-southwest of the small town of Soudan, Va., on Buckhorn Creek, we located a small village site, 44Mc54. At the time this site was visited it was part of an old cornfield and since the crop had not been picked the site was not tested.

From the surface between rows we made a random surface collection. We found a few chert points, a single quartz point, and 110 potsherds. All of the stone tools were rather crude and appeared to be unfinished.

The breakdown of the 110 sherds is as follows: 102 textile-impressed and 8 plain. The textile-impressed sherds corresponded exactly to the type established for Clarksville Textile-Impressed; while the 8 plain sherds were rather small and badly eroded, the paste characteristics would indicate that they, too, belonged to the Clarksville Series.

ROANOKE COMPONENT
(44Mc1)

Site 44Mc1, a village site just below the main axis of the John H. Kerr Dam and opposite the head of Buggs Island at 78°17′43″ longitude, 36°36′17″ latitude, Boydton Magisterial District, is approximately 200 feet long by 25 feet wide. At the time of the survey it was 100 feet from the edge of the Roanoke River in an old cornfield, but with the construction activity it was destroyed when it became a part of the borrow area for soil to be used in the wing dam of the main structure.

We found a number of small eroded sherds both on the surface and in testing the site, as well as a sherd discoidal and a few stone chips. From the paste characteristics we would place this site in the Hyco series.

BUGGS ISLAND COMPONENT

SITE 44MC2

A half mile upstream from the damsite on the north bank of the Roanoke River is a slight knoll adjacent to the river's edge. Atop this knoll is a rather extensive village site which has been designated as site 44Mc2.

The soil here, like a great deal of the bottom land, was rather loose and sandy and barren of most vegetal growth. Our attention was first attracted to the large number of very fine stone chips which were scattered over the surface. The brightly colored chalcedony chips stood out rather prominently from the dull grays of the cherts and the white quartz chips.

We laid out a 10-foot square and collected all of the chips from the surface of this area. Upon the completion of our task, we had gathered 272 chalcedony chips, 199 chert chips, 40 rhyolite chips, and only 14 quartz chips. We anticipated that this would be indicative and reflect in the material used in the manufacture of the various stone artifacts which this site might yield.

Next, we extensively tested the site, through the use of 5-foot square test pits. Each pit penetrated well into sterile subsoil before it was discontinued. The results of our testing showed that the river had succeeded in completely churning up the cultural deposit, so that practically nothing was found beneath the surface of the site.

Our random surface collection produced 119 sherds, which we separated into 63 cord-wrapped paddled, 23 fabric-marked, 23 textile-impressed, 4 plain, 4 net-impressed, and 2 combed. Nine were rim sherds and the rest were body sherds. All had paste characteristics of the Clarksville Series, designating that this site belonged to the overall Clarksville cultural horizon.

Two stemmed chert projectile points, one diamond-shaped and one fragmentary quartz point, and a quartzite hammerstone completed the material from this site.

SITE 44MC3

Site 44Mc3 lies approximately 2,500 feet east of the confluence of Easter Creek and the Roanoke River at 78°22′08″ longitude, 36°35′03″ latitude. A random collection from the surface consisted of 82 sherds, a few projectile points, fragmentary briquettes, and a few animal bones. The sherds were classified as follows: 51 textile-impressed, 9 plain, 13 cord-wrapped paddle, and 9 fabric-marked. Most of these belonged with the Hyco Series. Besides the sherds we recovered 2 chert projectile points from the surface.

Testings proved that the greatest concentration of the debris lay in the western portion of the site.

SITE 44MC4

Site 44Mc4, a village site, east of the juncture of Easter Creek and the Roanoke River, has been pinpointed at 78°33′42″ longitude, 36°35′16″ latitude. The site measured 500 feet long by 50 feet wide. A random collection from the surface yielded 65 potsherds, fragmentary projectile points, and a crudely chipped chert spade.

The sherds were separated into the following categories: textile-impressed, 38 body sherds and 1 rim sherd; combed, 3 body sherds; Hyco Fabric-Marked, 3 body sherds; Hyco Plain, 9 body sherds; and Hyco Cord-Wrapped Paddle, 11 body sherds.

Testing showed that the greatest concentration of cultural material was noted on the western half of the site but this was rather meager.

SITE 44MC5

Site 44Mc5, a village site, mapped at 78°23′17″ longitude, 36°35′22″ latitude, is 100 feet north of the Roanoke River and measures 60 feet long by 50 feet wide.

Lying scattered over the surface of the area were a number of potsherds, steatite sherds, nutting stones, and a crude basin-type metate. The metate was almost oval in outline, fairly heavy, and measured 20 inches long, and 14 inches wide, its greatest thickness being 4 inches. The grinding surface was slightly dish shaped and sunk into the stone slightly over an inch and a quarter. A diligent search failed to turn up any mano. Our investigations within the reservoir basin failed to turn up many metates and for this reason they were not too diagnostic of the cultures of the basin.

Fifty-five sherds were salvaged from the surface of the site. These have been classified as textile-impressed, 38 body sherds and 1 rim sherd; cord-wrapped paddle, 7 body sherds and 1 rim sherd; plain, 2 body sherds; combed, 1 body sherd; net-impressed, 2 body sherds and 1 rim sherd; fabric-marked, 3 body sherds; all in keeping with the Hyco Series.

Near the western margin of the site we picked up a very crude ax. This was made from a chert nodule which had been crudely notched and the blade made by knocking off a few large chips.

SITE 44MC6

Site 44Mc6, a campsite, mapped at 78°23′56″ longitude, 36°35′15″ latitude, lay on the north bank of the Roanoke River approximately 1 mile upstream from the confluence of Easter Creek and the Roanoke River. This puts the site within the Boydton Magisterial District.

The field wherein the site was located had been planted to corn and the old stalks covered the field. Testing showed that the entire campsite had been destroyed through intensive cultivation and that no remnants remained undisturbed.

The plowed zone averaged 8 to 9 inches in thickness and contained fragments of broken stones, chips of stone, and an occasional potsherd. None of this material was plentiful.

Surface indications showed that the cultural material was spread over a distance 50 feet long by 25 feet wide. It is doubtful if the original deposit covered as large an area, for plow drag may have spread it somewhat.

Eleven body sherds were recovered from this site. They are cord-wrapped paddled 1, fabric-marked 3, combed 1, and textile-impressed 6.

SITE 44MC8

Site 44Mc8, a small village site, mapped at 78°25′46″ longitude, 36°35′48″ latitude and east of the juncture of Butchers Creek and the Roanoke River, lay in an old cornfield on the north bank of the river in the Boydton Magisterial District. Surface indications covered an area roughly 100 feet long by about 75 feet wide.

Testing revealed that there was no depth to this site. Most of the cultural material was incorporated within the plowed zone. Plowing, in the past, had scattered the sherds and other cultural debris over a wider area than that in which it was originally deposited.

A trough-shaped metate was found on the surface of the site as well as a number of fragmentary nutting stones. None were saved on account of their weight.

A random collection gave us 6 steatite sherds, 1 of which had an ovate-shaped handle or lug just below the rim; 1 crude notched stone; 1 small quartz hammerstone; 2 slate fragmentary tools; 2 stemmed quartz projectile points; 1 triangular quartz point with excurvate base; 2 fragmentary quartz points; 1 lanceolate chert point; 3 fragmentary chert points; 1 fragment of red ocher; and 79 potsherds.

The sherds were subdivided into the following: net impressed, 1 body sherd; cord-wrapped paddle, 5 body and 1 rim sherds; fabric-marked, 1 body; combed, 1 body sherd; plain, 12 body and 1 rim sherds; textile-impressed, 59 body sherds.

SITE 44MC9

Site 44Mc9, a small campsite located at 78°26′32″ longitude, 36°35′43″ latitude, is just west of the juncture of Handley Creek and the Roanoke River. Surface indications measured 100 feet long by 24 feet wide.

The site suffered from erosional action of the frequent freshets, which accounts for the widely scattered cultural material. Testing showed that there was no depth to this site, so a random collection was made from the surface; 32 sherds, 1 quartz chopper, 1 stemmed chert projectile point, 1 chert trianagular projectile point, 1 ovate chert projectile point, and fragments of 3 quartz and 3 chert points were recovered.

We found that the sherd complement consisted of textile-impressed, 12 body sherds; plain, 2 rim and 5 body sherds; cord-wrapped paddle, 6 rim and 16 body sherds; and combed with 1 rim sherd.

SITE 44MC11

Site 44Mc11, a small village site, situated at 78°28′16″ longitude, 36°43′31″ latitude, on the north bank of the Roanoke River in the Boydton Magisterial District, measured 200 feet long by 100 feet wide and lay in an open pasture.

Testing showed that the site had been farmed intensively and that all cultural material had been badly churned up and as a consequence it now rests entirely within the plowed zone. A small random collection was made from the surface of the site. This was made up of the following artifacts: 1 small chert triangular point, 1 crude chert spade, and 88 sherds. The sherds were separated into the following wares: textile-impressed, 53 body and 3 rim sherds; plain, 11 body sherds; fabric-marked, 2 body and 1 rim sherds; cord-wrapped paddle, 10 body sherds; and combed, 8 body sherds.

SITE 44MC18

Site 44Mc18, a small village site, situated at 78°37′38″ longitude, 36°40′02″ latitude, lies on the west bank of the Dan River about three-quarters of a mile upstream from the foot of Oak Hill Island.

This site was badly damaged by erosion during the 1940 freshet, when a deep gully was cut through the very center of the site.

At the time of our survey the site was practically overgrown with broom straw, grasses of various sorts, as well as a few small pine trees. We did not test the site but managed to salvage a few sherds from the surface. Our surface collection consisted of 13 sherds which were separated into: fabric-marked, 5 body and 3 rim sherds; combed, 1 rim and 1 body sherd; textile impressed, 2 rims and 1 body sherds.

SITE 44MC19

Site 44Mc19, an extensive village site, 300 feet long by 175 feet wide, was located on the south bank of the Dan River in an old cornfield at 78°38′16″ longitude, 36°40′53″ latitude, in the Clarksville Magisterial District.

Testing showed that the site had a mantle of sand and silt to a depth of 9 inches. In this layer were a few sherds, some mussel shells, and chips of stone. Below this we located the cultural layer which had a depth of 9 inches. Below this was clean sterile river sand of indefinite depth.

We succeeded in salvaging 1 chert pick, 1 chert ovate projectile point, 1 quartz ovate projectile point, fragments of 2 stemmed chert points, 1 steatite potsherd, and 143 clay potsherds. An examination of the sherds gave us the following wares, broken down into body and rim sherds: fabric-marked, 40 body sherds; plain, 26 body and 1 rim sherds; cord-wrapped paddle, 74 body and 2 rim sherds. All of these were assigned to the Hyco Series.

SITE 44MC21

Site 44Mc21, a small village site situated at the head of Fields Island in a heavily wooded area was formerly known as the "Old Skipwith's Mellon Patch." This patch was constantly cultivated for a number of years until about 20 or 30 years ago when it was allowed to go back to brush. The cultivation obliterated any surface indications that were present. Mr. William Maxey, of Richmond, Va., helped to identify the site. He told how the site had suffered from the various freshets in the past and how it was completely denuded of all cultural evidence.

In 1870 a freshet denuded not only the vegetation from the site but practically all of the topsoil and some of the cultural deposits. After the waters had subsided a few complete clay pots, some projectile points, and a few metal objects were exposed and retrieved. Some of this material is now in the Maxey collection in Richmond, Va.

The entire island was again inundated by the 1940 freshet and further erosion took place. After the flood the site was revisited by parties unknown and a collection of cultural remains was made. The whereabouts of this material or the parties who made the collection could not be located.

At the time of the survey we managed to pick up 7 sherds from the area: 4 body and 1 rim sherds of textile-impressed, and 2 body sherds bearing combed impressions.

SITE 44MC22

44Mc22, a village site, is located near the foot of Fields Island. Here we made extensive tests because the surface was sprinkled with sherds, stone chips, and some projectile points, but we could not find anything beneath the ground. We went down 4 or 5 feet and continued to find nothing but sterile river sand. It would appear that this surface material was redeposited material from sites further upstream and brought to this place by the river's actions.

Our random surface collection consisted of 1 chert spade and 19 potsherds. These were broken down into: textile impressed, 4 rim sherds;

fabric-marked, 4 body and 2 rim sherds; and cord-wrapped paddle, 3 body and 6 rim sherds. All fitted into the Clarksville Series.

SITE 44MC31

44Mc31, a small campsite in the Boydton Magisterial District, located at the head of Keats Branch at 78°17′32″ longitude, 36°33′28″ latitude, was completely churned up by plow action. Testing showed that there was no depth, as directly under the plowed zone was sterile red sandy clay.

A random collection consisting of 5 sherds was made from the surface of the site. All of these sherds were from a cord-wrapped paddle pot or pots. Near the edge of the site a quartzite stone ball was found.

SITE 44MC35

Site 44Mc35, a very small campsite in an old cornfield situated at 78°22′43″ longitude, 36°35′05″ latitude, measured approximately 35 feet long by about 20 feet wide. Testing showed that intensive cultivation had reduced all deposits so that they either rested upon the surface or were confined to the plowed zone. A random collection was made from the surface of the site, which consisted of 13 badly eroded sherds. These appear to be: textile-impressed, 12 body sherds; and plain, 1 body sherd. Paste characteristic is similar to the early Clarksville Series.

SITE 44MC36

Site 44Mc36, a village site situated at 78°21′58″ longitude, 36°34′47″ latitude, in the Boydton Magisterial District, measured 150 feet long by about 100 feet wide and lay in an old cornfield which had reverted to pasturage. Testing showed that the cultural deposits were thin so that we confined our collection to the surface of the site. Here we managed to collect 7 chert triangular forms both perfect and fragmentary, 5 chert chips, 1 unfinished triangular quartz point, 1 quartz chip, and 46 potsherds which were separated into: fabric-marked, 41 body and 2 rim sherds; and cord-wrapped paddle, 3 body sherds.

SITE 44MC37

Site 44Mc37, a village site that covered an area approximately 150 feet long by 75 feet wide, is situated in the Boydton Magisterial District at 78°21′47″ longitude, 36°34′42″ latitude, in an old cornfield.

Testing showed that there was a thin layer of undisturbed cultural material lying under the plowed zone. Initial separation was kept but subsequent examination revealed that there was no cultural differentiation, so all material was studied as a whole.

From a random surface collection and from our test pits we recovered 2 quartz triangular points, 1 chert triangular point, and 93 potsherds. All of the sherds were parts of the Hyco Series. These were separated into plain, 6 body and 1 rim sherds; cord-wrapped paddle, 12 body sherds; fabric-marked, 14 body and 1 rim sherds; textile impressed, 41 body sherds; and simple stamped, 16 body sherds and 2 rims.

SITE 44MC39

Site 44Mc39, is a small campsite in the Boydton Magisterial District, which is just west of the confluence of Carter's Branch and the Roanoke River near the foot of Tarry's Island at 78°24′43″ longitude, 36°34′45″ latitude, and covers an area roughly 50 feet long by 35 feet wide.

All cultural evidence appeared on the surface of the site, from which we made a random collection consisting of 1 stemmed quartz projectile point and 29 potsherds. These consisted of 2 cord-wrapped paddle sherds, 9 textile-impressed sherds, and 19 whose exterior treatment could not be determined on account of the fact that they were badly eroded.

SITE 44MC52

Site 44Mc52 is a small campsite, 50 feet long by 35 feet wide, in an old cornfield 500 feet east of Grassy Creek site, 44Mc53, in the Boydton Magisterial District. The scanty cultural material was found on the surface of the site. We recovered: 1 quartz projectile point, 3 textile-impressed sherds, and 1 cord-wrapped paddle sherd.

SITE 44MC60

Site 44Mc60, a small campsite situated in the Boydton Magisterial District at 78°32′12″ longitude, 36°38′13″ latitude, in a cornfield, measured 80 feet long by 30 feet wide. A series of test pits demonstrated that there was a thin cultural layer, 0.3 foot thick, underlying the plowed zone. From the surface of the site we gathered 1 large stemmed quartz point, a fragment of another quartz point, and a notched stone whose purpose is unknown. Seventeen eroded sherds were also gathered. On some of their exterior surfaces textile impressions are very faint.

SITE 44MC61

Site 44Mc61, a campsite located on the south bank of the Dan River opposite the midpoint of Occaneechi Island in the Clarksville Magisterial District at 78°35′40″ longitude, 36°39′05″ latitude, is 100 feet long by 50 feet wide. Numerous chips of chert, quartz, quartzite, and an occasional jasper specimen lay scattered over the surface. We picked up a tip of a pipestem, 1 small triangular quartz point, and 24 sherds. These were subdivided into 5 plain, 3 cord-wrapped paddle, and 16 textile-impressed.

SITE 44MC63

Site 44Mc63, a village site 200 yards downriver from site 44Mc18, covers an area 300 feet long by 200 feet wide. Part of the site is in an open pasture and the rest is in pine woods. The whole is in the Clarksville Magisterial District at 78°37′32″ longitude, 36°39′58″ latitude. Cultural material was widely scattered over the surface of the site.

A random collection accounts for 26 potsherds, of which 10 are cord-wrapped paddle, 1 plain, 6 fabric-marked, 6 combed, and 3 textile-impressed.

SITE 44MC64

Site 44Mc64, a village site in the Clarksville Magisterial District at 78°41′22″ longitude, 36°40′55″ latitude, is on the south bank of the Dan River and just east of the confluence of Aarons Creek and the river. It covers an area about 150 feet square. The eastern half of the site has been cultivated but the western portion is still in brush.

The terminus of the old Moon's Ferry, which was operated in the early days of Buffalo Springs, a fashionable spa, was located on this spot. The ferry was abandoned many years ago.

From the surface of the cultivated half of the site, we recovered 45 sherds which consist of 24 cord-wrapped paddle, 13 textile-impressed, and 9 plain sherds.

SITE 44MC77

Site 44Mc77 is outside of the John H. Kerr Reservoir area and as such will not be treated in this report.

CHARLOTTE COUNTY, VA.

Five small sites were located in Charlotte County during the initial reconnaissance of the upper reaches of the reservoir. None were very large or extensive and the remains of their material culture were sparse.

ABBEYVILLE MILL SITE

(44Ch1)

The Abbeyville Mill Site, 44Ch1, known for the former location of an old gristmill and located on the mainland opposite the foot of Harris Island, occupies a slight knoll which slants toward the

Roanoke River. It lies just over the Mecklenburg County line into Charlotte County.

The past floods aided by plow action have exposed large numbers of chert, rhyolite, chalcedony, and quartzite chips, as well as a few finished stone artifacts. It seems that chert and quartzite were used about equally in the manufacture of their projectile points. The earlier forms were pretty well confined to chert, while the later forms were made mostly of quartzite.

A number of fluted points have been reported as coming from this site but we failed to find even the slightest trace of any.

In the chert forms we recovered the following: 1 Gary, 2 pentagonals, a large triangular form, and a fragmentary section of a rather thick-stemmed variety.

Those of quartzite are as follows: 2 small, blunt, thin pentagonal forms; 3 small isosceles triangular points; and a fragmentary section of a large stemmed lance head.

In rhyolite we found a single large triangular point with excurvate sides, slightly concave base with the slight trace of a centrally placed "tit," and rather heavy or thick.

Besides these we recovered a large scraper made from a thick chert flake whose ventral and dorsal surfaces are parallel. One end was chipped abruptly to form the scraper surface. Upon its dorsal surface are two parallel incised lines, 20 mm. in length and 1 mm. in width, which are V-shaped in cross section. We could not figure out why these lines were placed on this surface, for they are much too small to have acted as grind surfaces to point bone awls or similar objects, and, too, the chert does not have the necessary characteristics for a good grinding surface.

We gathered 95 potsherds from the surface of the site by gathering everything over a given area. No selectivity was attempted. The color range and the paste characteristics would indicate that all were members of the Clarksville Series. The exterior surface treatments are typical of the series. Twenty-eight are cord-wrapped paddle, 23 are plain, and 43 are textile impressed, while there was one with faint tracings of combing.

HARRIS ISLAND I

(44Ch2)

At the foot of Harris Island was a small picnic area, 44Ch2, roughly 30 feet by 30 feet square. Adjoining this area to the north were the remains of a small campsite over which was strewn a mass of stone chips. A number of 5-foot-square test pits were introduced into the area but they failed to reveal the source of this material.

Near the northern edge of the site were found 3 Clarksville cord-wrapped paddle sherds. It is surmised that the bulk of this cultural material was secondarily deposited by stream action rather than being deposited there by the Indians.

HARRIS ISLAND II

(44Ch3)

Farther upstream, about a half mile on Harris Island, were the remains of another small campsite, 44Ch3. The surface of this site, like the one at the foot of the island, was generously covered with chip scrap. Testing failed to reveal any features, but we did recover 10 potsherds from the plowed zone. These have been determined as 5 Clarksville cord-wrapped paddle and 5 Clarksville textile impressed.

LITTLE RIVER

(44Ch4)

Seven hundred feet south of Clays Quarry and 1,000 feet northeast of the confluence of Jeffreys Canal and Little River was a sizable area given over mostly to workshop scrap, the results of stone chipping, site 44Ch4. The area was closely gone over and as a result we recovered fragments of two quartz projectile points. One is a medium-sized stemmed fragment with the tip missing and the other is only a fragment of the central portion of a point with both the butt and tip missing. Both are thick in cross section and neither displays any great degree of chipping skill. In our search we recovered 10 potsherds: 8 are textile-impressed and 2 are plain. Both are recognizable wares of the Clarksville Series.

TALLEYS SHOALS

(44Ch5)

North of Jeffreys Canal and approximately 1 mile north of Talleys Shoals in an old broomsage field were the remains of a small village, site 44Ch5, which measured about 50 feet square. The heavy coverage of the surface made collecting difficult. In testing the site we recovered 20 potsherds from the underlying humus layer. These have been separated into 1 Clarksville combed, 3 Clarksville plain, and 16 Clarksville textile-impressed. From these same testings we recovered a small clear quartz triangular point which was not only very thin but very delicately fashioned.

SITES IN NORTH CAROLINA PORTION OF THE RESERVOIR BASIN

We located one site in Warren County, 31Wa1, and two sites in Vance County, 31Va1 and 31Va2. All three were workshops.

31Wa1 is located on a small hill adjacent to Dix Creek, a tributary of Nutbrush Creek, and covers an area about 40 feet square. Over this area numerous stone chips are scattered. A careful search of the area failed to produce even a single artifact.

The two sites in Vance County had all the earmarks of recognizable workshops, since chippage practically covered the surface of the sites and large chunks of broken stones lay about the area. Here, again, we failed to recover a single artifact.

SUMMARY OF POTTERY TYPES

A summation of the pottery types from the various sites within the basin is presented in tabular and graphic forms, tables 18 through 21. Forty-one thousand eight hundred and forty-four sherds constitute the study series. Of this number 11,969 have been assigned to the Hyco Series and the remainder to the Clarksville Series.

By glancing over the tables one will see that there is greater elaboration of exterior surface treatments in the Clarksville Series, a trait which is to be expected since it has a greater time-space relationship.

The basic difference between the two series lies in the fineness of the particles and the amount of sand added to the clay to form the paste, as well as in the methods of firing the vessels. In the Hyco Series the sand particles are much finer and the amount used constitutes less than 45 percent of the total contents; while in the Clarksville Series the particles are much larger and the amount ranges around 55 percent, or greater. All Hyco vessels were fired under an oxidizing atmosphere which is not only more penetrating but to a certain extent is controllable, bringing about more uniform color standard with fewer incidents of fire clouds. In the Clarksville Series an oxido-reducing atmospheric condition was utilized which is not only less penetrating but does not produce uniform results in the color range, hence the mottled color effect ranging from a buff-brown, a dark gray, or a black in wall coloration and with a darkened core. Fire clouds are nearly always present and the hardness of the ware is much lower than that found in the Hyco Series.

Using textile-impressed as a controllable standard in the pottery-bearing sites and graphing the other wares, each in its relative position according to its percentage range, a standard chart of pottery trends over the existing occupational span of the reservoir area is then established (fig. 65). Textile impressed had a steady growth from the beginning to the end, while fabric-marked was at its height at the beginning of pottery making and hastily decreased only to have a slight renaissance which gradually died away near the end of the occupation of the reservoir basin. The heavier fluctuations in the fabric-marked graph were repeated on a smaller scale and over a longer range.

TABLE 18.—*Numerical count of the various surface treatments from sites within the John H. Kerr Reservoir*

Site No.	Hyco Fabric-Marked	Hyco Cord-Wrapped Paddle	Hyco Plain	Hyco Combed	Hyco Net-Impressed	Hyco Textile-Impressed	Simple-Stamped	Clarksville Fabric-Marked	Clarksville Cord-Wrapped Paddle	Clarksville Plain	Clarksville Combed	Clarksville Net-Impressed	Clarksville Textile-Impressed	Clarksville Textile-Roughened	Clarksville Open-Twilled	Clarksville Corn Cob-Impressed	Clarksville Incised	Clarksville Punctated	Total
Ha7	1,414	316	13	129	18	44	----	----	----	----	----	----	----	----	----	----	----	----	1,934
Ha5	83	86	8	44	2	20	----	----	----	----	----	----	----	----	----	----	----	----	243
Mc2	23	63	4	2	4	23	----	----	----	----	----	----	----	----	----	----	----	----	119
Mc5	3	8	2	1	3	39	----	----	----	----	----	----	----	----	----	----	----	----	56
Mc19	8	30	10	1	6	80	----	----	----	----	----	----	----	----	----	----	----	----	135
Ha6	6,272	1,153	97	63	136	70	----	----	----	67	----	----	253	----	81	----	1	2	8,195
Mc10	140	117	60	36	19	20	----	153	354	117	----	----	24	----	----	----	----	----	1,040
Mc7	298	935	289	122	17	47	2	1,453	920	147	649	----	165	28	41	----	----	1	5,114
Mc14	7	110	83	49	109	200	10	40	394	1,818	691	----	14,097	760	----	133	12	6	18,519
Mc23	----	----	----	----	----	----	----	375	256	66	24	10	158	----	224	----	----	----	1,113
Mc53	----	----	----	----	----	----	----	1,018	1,015	350	640	42	794	----	12	----	----	----	3,871
Mc4	----	----	----	----	----	----	----	3	11	9	3	----	39	----	----	----	----	----	65
Mc8	----	----	----	----	----	----	----	1	6	13	8	----	59	----	----	----	----	----	87
Mc11	----	----	----	----	----	----	----	3	10	11	8	----	56	----	----	----	----	----	88
Mc63	----	----	----	----	----	----	----	6	10	1	6	----	3	----	----	----	----	----	26
Mc17	----	----	----	----	----	----	----	84	32	6	----	6	110	----	----	----	----	----	238
Mc62	----	----	----	----	----	----	----	75	20	6	----	2	58	----	----	----	----	----	161
Mc6	----	----	----	----	----	----	----	3	1	----	1	----	6	----	----	----	----	----	11
Mc9	----	----	----	----	----	----	----	----	22	7	1	----	12	----	----	----	----	----	42
Mc3	----	----	----	----	----	----	----	9	13	9	----	----	51	----	----	----	----	----	82
Mc37	----	----	----	----	----	----	----	15	12	7	----	----	41	----	----	----	----	----	75
Mc22	----	----	----	----	----	----	----	6	9	----	----	----	4	----	----	----	----	----	19
Mc77	----	----	----	----	----	----	----	15	14	----	----	----	3	----	----	----	----	----	32
Mc61	----	----	----	----	----	----	----	----	3	5	----	----	16	----	----	----	----	----	24
Mc64	----	----	----	----	----	----	----	----	24	9	----	----	13	----	----	----	----	----	46
Mc18	----	----	----	----	----	----	----	8	----	----	2	----	3	----	----	----	----	----	13
Mc51	----	----	----	----	----	----	----	----	----	124	123	----	45	----	----	----	----	----	292
Mc36	----	----	----	----	----	----	----	43	3	----	----	----	----	----	----	----	----	----	46
Mc35	----	----	----	----	----	----	----	----	----	1	----	----	12	----	----	----	----	----	13
Mc54	----	----	----	----	----	----	----	----	----	8	----	----	102	----	----	----	----	----	110
Mc21	----	----	----	----	----	----	----	----	----	----	2	----	5	----	----	----	----	----	7
Mc76	----	----	----	----	----	----	----	----	----	----	1	----	1	----	----	----	----	----	2
Mc52	----	----	----	----	----	----	----	----	1	----	----	----	3	----	----	----	----	----	4
Mc31	----	----	----	----	----	----	----	----	5	----	----	----	----	----	----	----	----	----	5
Mc60	----	----	----	----	----	----	----	----	----	----	----	----	17	----	----	----	----	----	17
Total	8,248	2,818	566	447	314	543	12	3,310	3,135	2,781	2,159	60	16,150	788	358	133	13	9	41,844

TABLE 19.—*Relationships of sites according to percentages based upon exterior surface treatments*

Site No.	Hyco Fabric-Marked	Hyco Cord-Wrapped Paddle	Hyco Plain	Hyco Combed	Hyco Net-Impressed	Hyco Textile-Impressed	Simple-Stamped	Clarksville Fabric-Marked	Clarksville Cord-Wrapped Paddle	Clarksville Plain	Clarksville Combed	Clarksville Net-Impressed	Clarksville Textile-Impressed	Clarksville Textile-Roughened	Clarksville Open-Twilled	Clarksville Corn Cob-Impressed	Clarksville Incised
Ha7	73.1	16.3	0.7	6.7	0.8	2.3											
Ha5	34.2	35.4	3.3	18.1	.8	8.2											
Mc2	19.3	52.9	3.4	1.7	3.4	19.3											
Mc5	5.4	14.2	3.6	1.8	5.4	69.6											
Mc19	5.7	22.2	7.4	.7	4.4	59.3											
Ha6	76.5	14.1	1.2	.8	1.7	.9				0.8			3.0		1.0		
Mc10	13.5	11.3	5.7	3.5	1.8	1.9		14.7	34.0	11.3							
Mc7	5.8	18.3	5.7	2.4	.3	.9		28.4	18.0	2.9	12.7		3.2	0.6	.8		
Mc14		.6	.5	.3	.6	1.1	0.1	.2	2.1	9.8	3.7		76.1	4.1		0.7	0.1
Mc23								33.7	23.0	5.7	2.2	0.9	14.2		20.1		
Mc53								26.3	26.2	9.0	16.5	1.1	20.5		.3		
Mc4								4.6	16.7	13.9	4.6		60.0				
Mc8								1.2	6.9	14.9	9.2		67.2				
Mc11								3.4	11.4	12.5	9.1		63.6				
Mc63								23.1	38.5	3.8	23.1		11.5				
Mc17								35.3	13.5	2.5		2.5	46.2				
Mc62								46.6	12.4	3.7		1.3	36.0				
Mc6								27.3	9.1		9.1		54.5				
Mc9									52.4	17.7	2.3		28.6				
Mc3								11.0	15.8	11.0			62.2				
Mc37								20.0	16.0	9.3			54.7				
Mc22								31.6	47.4				21.0				
Mc77								46.9	43.8				9.3				
Mc61									12.5	20.8			66.7				
Mc64									52.2	16.9			28.2				
Mc18								61.5			15.4		23.1				
Mc51										42.5	42.1		15.4				
Mc36								93.5	6.5								
Mc35										7.7			92.3				
Mc21										7.3			92.7				
Mc76											29.6		71.4				
Mc54											50.0		50.0				
Mc52										25.0			75.0				
Mc31										100.0							
Mc6													100.0				

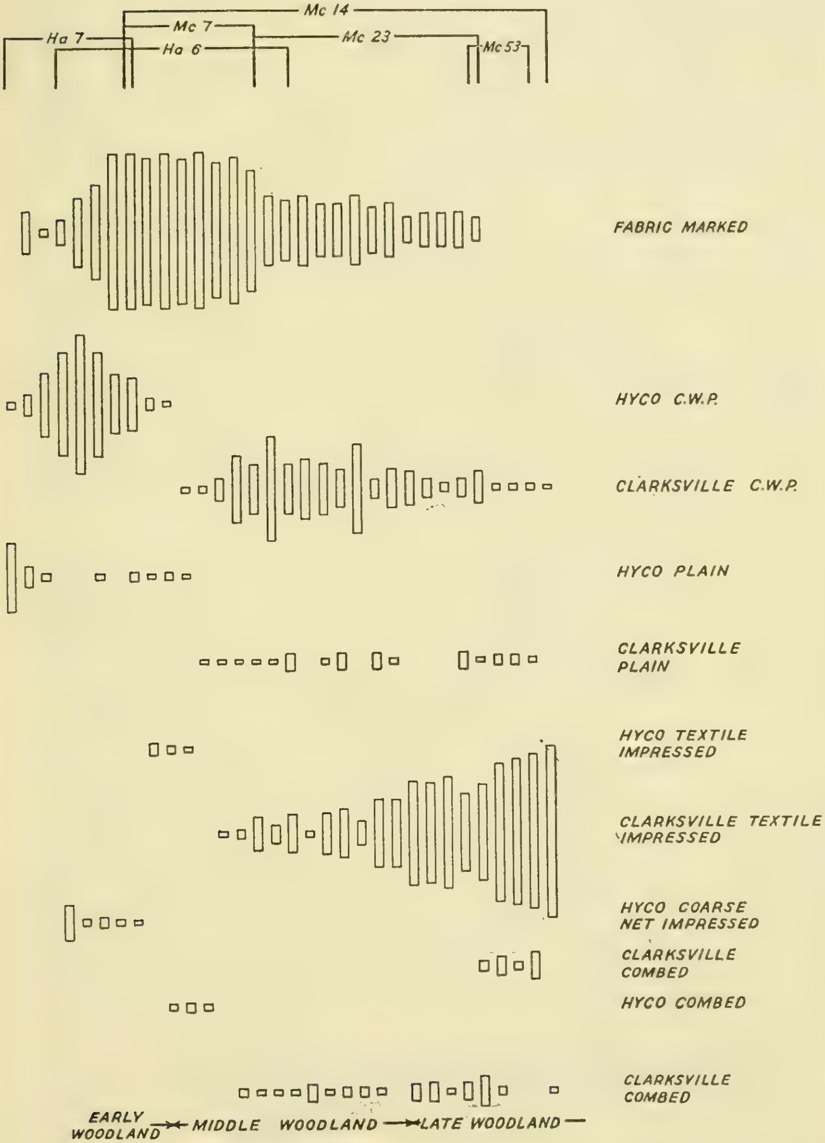

FIGURE 64.—Interdigitated ceramic series relating to sites: Clarksville, 44Mc14; Grassy Creek, 44Mc53; Easter, 44Mc7; Fields Island, 44Mc23; Tollifero, 44Ha6; and Hyco River, 44Ha7.

Combed ware presented three small nodes to be followed by a larger node early in the occupational range; a second and third sequence of nodes appeared to be followed by a small node just before this ware finally disappeared from the scene. Plain ware was not at all predictable in that it rises and falls in irregular pulsations gaining steadiness shortly after the midpoint in the graph. Combing and textile-impressed were the only wares on the upgrade, while fabric-marked, plain, and combed wares gradually diminished in importance and finally disappeared shortly before the basin was deserted and the textile-impressed had gained complete control of the field.

TABLE 20.—*Master chart of the pottery trend within the reservoir basin, with sites arranged along a textile-impressed standard*

Site designation	Textile-Impressed	Fabric-Marked	Cord-Wrapped Paddle	Plain	Combed	Net-Impressed	Simple-Stamped	Textile-Roughened	Open-Twilled	Corn Cob-Impressed	Incised	
44Mc10	1.9	28.2	45.3	17.0	3.5	1.8	------	------	------	------	------	------
44Ha7	2.3	73.1	16.3	.7	6.7	.8	------	------	------	------	------	------
44Ha6	3.9	76.5	14.1	2.0	.8	1.7	------	------	------	------	------	------
44Mc7	4.1	34.2	36.3	8.6	15.1	.3	------	0.6	.8	------	------	------
44Ha5	5.2	34.2	35.4	3.3	18.1	.8	------	------	------	------	------	------
44Mc77	9.3	46.9	43.8	------	------	------	------	------	------	------	------	------
44Mc63	11.5	23.1	38.5	3.8	23.1	------	------	------	------	------	------	------
44Mc23	14.2	33.7	23.0	5.7	2.2	.9	------	------	20.1	------	------	------
44Mc51	15.4	------	------	42.5	42.1	------	------	------	------	------	------	------
44Mc2	19.3	19.3	52.9	3.4	1.7	3.4	------	------	------	------	------	------
44Mc53	20.5	26.3	26.2	9.0	16.5	1.1	------	------	------	------	------	------
44Mc22	21.0	31.6	47.4	------	------	------	------	------	------	------	------	------
44Mc18	23.1	61.5	------	------	15.4	------	------	------	------	------	------	------
44Mc9	28.6	------	52.4	17.7	2.3	------	------	------	------	------	------	------
44Mc64	28.2	------	52.2	16.9	------	------	------	------	------	------	------	------
44Mc62	36.0	46.6	12.4	3.7	------	1.3	------	------	------	------	------	------
44Mc17	46.2	35.3	13.5	2.5	------	2.5	------	------	------	------	------	------
44Mc54	50.0	------	------	------	50.0	------	------	------	------	------	------	------
44Mc6	54.5	27.3	9.1	------	9.1	------	------	------	------	------	------	------
44Mc37	54.7	20.0	16.0	9.3	------	------	------	------	------	------	------	------
44Mc19	59.3	5.7	22.2	7.4	.7	4.4	------	------	------	------	------	------
44Mc4	60.0	4.6	16.7	13.9	4.6	------	------	------	------	------	------	------
44Mc3	62.2	11.0	15.8	11.0	------	------	------	------	------	------	------	------
44Mc11	63.6	3.4	11.4	12.5	9.1	------	------	------	------	------	------	------
44Mc61	66.7	------	12.5	20.8	------	------	------	------	------	------	------	------
44Mc8	67.2	1.2	6.9	14.9	9.2	------	------	------	------	------	------	------
44Mc5	69.6	5.4	14.2	3.6	1.8	5.4	------	------	------	------	------	------
44Mc76	71.4	------	------	------	29.6	------	------	------	------	------	------	------
44Mc52	75.0	------	------	25.0	------	------	------	------	------	------	------	------
44Mc14	77.2	.2	2.7	10.3	4.0	.6	0.1	4.1	------	------	0.7	0.1
44Mc35	92.3	------	------	7.7	------	------	------	------	------	------	------	------
44Mc21	92.7	------	------	7.3	------	------	------	------	------	------	------	------
44Mc60	100.0	------	------	------	------	------	------	------	------	------	------	------

TABLE 21.—*Overall relationships of pottery type percentages based upon exterior surface treatment for the entire reservoir basin*

Pottery type	Percent	Pottery type	Percent
Clarksville Textile-Impressed	38.6	Hyco Plain	1.3
Hyco Fabric-Marked	20.1	Hyco Combed	1.0
Clarksville Fabric-Marked	7.9	Clarksville Open-Twilled	.9
Clarksville Cord-Wrapped Paddle	7.5	Hyco Net-Impressed	.7
Hyco Cord-Wrapped Paddle	6.7	Clarksville Corn Cob-Impressed	.3
Clarksville Plain	6.6		
Clarksville Combed	5.2		100.0
Clarksville Textile-Roughened	5.2		

IRON-BEARING SITES

A number of closely spaced sites containing various types of iron specimens occupy positions on the secondary terrace, across from Oak Hill Island, on the Huntley and Russell tracts. All were located by Mr. James V. Howe, an expert on metals, who made his home at the old Russell Place, a lovely colonial house, a short distance from Clarksville, Va. He was first attracted by the chunks of a slaglike material which appeared on the surface of a number of areas and in his search for similar areas he managed to locate 21. All produced the same type of iron and slag fragments.

Some of these areas produced only a few iron fragments while others had a rather concentrated deposit. Several were partially explored by Howe to try to solve the source of these iron remains. His subsequent investigations produced many nondescript bits of iron, fragments of horseshoes, nails of various sizes and sorts, pieces of hinges, nubbins of tools and other scrap, all of which appeared to have been either cut, broken, or discarded. Several of these had marks of the wedge or chisel, and a number of the individual pieces were partially covered over with particles of a slaglike matter. All pieces were thoroughly rusted.

A fairly large sample of these iron objects was turned over to the River Basin Surveys party for study purposes. Among them are various sized nails, knife blades, bolts, chisels, and other forms. Howe had sectioned, etched, and polished several of the nodular forms with the possibility of determining the bodily configuration, as defined by specific patterns and the methods of smelting and hardening.

Later on Howe sent others of these nodular forms to the Mechanical Engineering Department of Iowa State College; to a member of the Gisholt Machine Company in Madison, Wis.; and to members of the U.S. National Bureau of Standards in Washington, D.C., to be tested for source and age.

He received reports from Emil F. Wagner, of the Gisholt Machine Company, who had examined the specimens and determined that they were "over 200 years old and probably older—an extremely old type of iron and processed directly from the ore."

R. W. Breckenridge, of Iowa State College, who was interested primarily from the standpoint of the early use of iron in America, cooperated by making microscopic, hardness, and spark tests of other specimens. His results showed:

(1) The nature of many of the articles and tools, some of which are only partially finished, is almost unmistakably of the colonial period or later.

(2) No coins with dates or any articles with personal or place names have been found.

(3) The material dug from the sites consists to a greater extent of smelter slag and not cinders from blacksmith forges.

(4) The iron "nuggets" and partially finished tools are microscopically of the type of iron produced by furnaces of earlier types than the cupola, blast furnace, or converter.

(5) No stock piles of iron ore, fuel (charcoal), or flux (shells or limestone) have been found.

(6) No remains of furnaces, forges, or air blowing devices have been found.

Those samples sent to the John Woodman Higgins Armory were later referred to the Byers Plant Laboratory to determine the composition and probable age. E. B. Story, metallurgist, reported on the analyses while C. J. Summerfield made the actual laboratory tests. Their report states:

> Three very interesting old ferrous metal specimens were submitted by the John Woodman Higgins Armory.
>
> Our investigations indicate rather conclusively that the material of all three specimens was made by direct fusion. On the premise it can be estimated that these three iron specimens are at least 300 years old because in the early part of the seventeenth century direct reduction methods gave way to the manufacture of iron by fusion methods in reverberatory hearth furnaces.
>
> The specimens could be much older than 300 years but the age cannot be determined by a study of the chemical and physical properties alone.
>
> To make these tests, a small portion was cut from each of the samples. These were prepared for macro-examination. The general overall etch pattern in each case revealed a pronounced heterogeneous macrostructure. No evidence of what is known as a piling structure was observed in any of the specimens and it could be concluded even at this preliminary stage of examination that the wrought iron was very likely produced by some early "direct reduction" process.
>
> These same specimens were then prepared for microscopic examination. In all three samples ferrite areas and pearlite areas of low and high carbon concentration were found. Some of the ferritic areas appeared to be relatively low in phosphorous concentration, while other ferritic areas were phosphorous rich. Inasmuch as the microstructure was so heterogeneous in all three specimens, it was decided to select such typical areas as would be representative for these microstructures as reproductions for this report. . . . Taken as a whole, they reflect the "direct reduction" method of wrought iron production. . . . It is to be noted that some of these structures or a combination of most of them were found in each of the specimens examined.
>
> The remaining portion of each sample received was hammered into thin sections and cut into small clippings for a chemical analysis. A complete analysis could not be made due to the insufficient amount of material available; analyses follows:

TABLE 22.—*Chemical analyses of iron objects from the Huntley and Russell tracts*

Element	Sample 1	Sample 2	Sample 3
	Percent	*Percent*	*Percent*
Manganese	0.010	0.004	0.006
Phosphorus	.262	.088	.138
Sulphur	.009	.019	.011
Silicon	.019	.140	.035

> Such variation in chemistry is not unusual for wrought iron produced by "direct reduction" methods. Almost any combination of *P*, *Mn*, *S*, and *Si* has been found in "direct reduction" wrought irons.

Both the chemical composition and the microstructural characteristics of the material bespeak considerable age; it appears that the material studied was made at a time when the only known method of production was by "direct reduction" of local ores and nearby fuel which was probably charcoal. Local ores showed wide variation in composition, as a rule, and the analyses are a reflection of the variation of the ores from which they were reduced.

It is also of interest to mention in connection with the microstructure observed that high carbon areas such as those found are generally associated with wrought irons made by "direct reduction," inasmuch as the control which was exercised at that early period did not recognize nor include an ability to prevent localized carbon absorption by the metallic iron initially formed in the reduction process. [Communication dated December 24, 1953.]

Going over the sites, personally, the writer found comparatively little slag, and no evidence of any furnaces was visible on any of these sites. Whether the iron was of local manufacture or transported into the area from some outside source could not be determined.

Seeking further information on the production of "wrought iron" the Encyclopedia Britannica was consulted. This source states:

The principal iron ores are the oxides and carbonates, and these readily yield the metal by smelting with carbon. The metal so obtained invariably contains a certain amount of carbon, free or combined, and the proportion and condition regulate the properties of the metal, giving origin to the three important varieties: cast iron, steel, wrought iron. [Enc. Brit., 1929, vol. 12, p. 645.]

Iron is very reactive chemically. Exposed to atmospheric influences it is more or less rapidly corroded, giving the familiar rust. For the production of rust, the presence of water and oxygen does not seem to be sufficient, and an "impurity" seems to be essential; this is provided in the iron itself or by the presence of carbon dioxide. . . . It dissolves in most dilute acids with the liberation of hydrogen. [Ibid., p. 646.]

Few implements of iron or steel survive for many years before they rust away, consequently there is little direct evidence to prove the point: nevertheless the antiquity of iron smelting is great. . . . Steel working and hardening, an advanced stage in the art which doubtless required centuries to reach, was common 3,000 years ago in Greece, and is mentioned by Homer.

The primitive methods which survive in the Catalan forge require a mixture of charcoal and iron ore selected for its purity. The whole is heated for several hours while a vigorous blast of air fans the fire, thereupon the ore becomes an incandescent sponge of metal: the clay or other minerals mixed with the iron oxide together with the charcoal ash, sinter into a slag, permeating the sponge and protecting the freshly reduced iron from further chemical action. After a given time, the furnace is broken into, the glowing ball of iron pulled out, and immediately, while still white hot, hammered vigorously to expel as much of the slag as possible, and to weld the hot particles of metal into a coherent mass.

With various changes in the furnace details, and in methods of producing the air blast, these methods produced all the iron available from the beginning up to the 14th century. It was truly a wrought iron. [Ibid, p. 649.]

Knowing that this section of Virginia and North Carolina contain small residual iron-bearing deposits which could be rather easily gathered, treated, and reduced by direct reduction methods and also that most of the land suitable for cultivation has been intensively worked for long periods of time, it is not too hard to explain the presence of this iron material.

Within colonial days this part of the two States was owned by large property holders who had their own blacksmiths and forges. These early blacksmiths knew how to reduce the local low-grade iron ores into metallic iron which in turn was used in their forges to replace wornout iron objects or to mend broken ones. Forges were portable and were moved about the farm as necessity demanded so that their stay in any one place was short lived. Upon the completion of a job a great bit of the scrap metal and the forge clinkers were dumped before the forge could be moved to its next assignment. Over periods of years these dump areas would multiply and it is highly unlikely that a smith would use the same dump area twice deliberately, thus accounting for the fairly large number of these areas concentrated about old Abbeville Mill.

SUMMARY

Evidence gathered during the River Basin Surveys' reconnaissance and excavation activities in the John H. Kerr Reservoir basin would indicate that there are two broad, general, cultural horizons present: (1) an extremely early prepottery culture characterized by the eastern variant of a fluted point industry, an aspect of the Paleo-Indian as distinguished from the true Folsom, as discovered in the western part of the United States; and variants of other early forms exemplified by a number of projectile types whose configurations closely resemble the Gypsum Cave, Manzano, Elys Ford Pentagonal, Pinto Basin, and others which developed into the typical eastern Archaic; and (2) a later Neo-Indian pottery-making group, mainly Woodland in character.

A mass of literature dealing with the evidence of a Paleo-Indian culture in North America has been piling up in the past few years. Most of this is based on artifactual evidence alone, some of which was found in sites within well recognized geological levels or strata and in association with extinct faunal remains.

The evidence we found of the Paleo-Indian groups within the confines of the John H. Kerr (Buggs Island) Reservoir basin is based upon surface indications which have eroded out of original context and been redeposited on the surface along with much later cultural material.

It has been taken for granted that the Paleo-Indian was a hunter who arrived in the New World sometime either within the glacial or early post-glacial period, that he manufactured a number of characteristic stone implements which are diagnostic of his culture, that he was nomadic by nature and depended upon the large herbivores as the main source of food, and that he hung around the fringes of such herds as long as they grazed in a specific area. He would establish temporary camps at this time to which he would bring the game he killed, build his campfires, chip out his stone projectile points and other tools, and probably tan several of the animal hides, which served many purposes. If shelters of any type were ever built we have no concrete evidence of such to date. Whether he buried his dead cannot be vouched for since we have not been able to locate even a single well-documented burial that can be associated with any of these early cultures. We know him only from his imperishable weapons and some few bone ornaments, which cannot possibly represent his total attainments. One of the best-known Early Man sites, to date, is the Lindenmeier site in northern Colorado.

It has been suspected, for quite some time, that there were a number of early nomadic hunters, similar to those of the western plains, who must have penetrated through the Ohio Valley into Virginia at a relatively early post-Mankato date. Unfortunately, we do not have corroborating geological and biological evidence to support our suspicions but we do have sufficient typological evidence, which has been accumulating over the years, to indicate his presence in the area.

Several years ago, while excavating a foundation for a motel, a multiple burial was uncovered in the vicinity of Natural Bridge, Rockingham County, Va. Twelve skeletons were uncovered. These were placed extended in two rows, lying on their right sides, their right hands tucked under their heads, their left arms down by their sides, and heads pointed to the north. Associated with them were two fluted points whose configurations resemble well-known Clovis types, as well as a heap of small limestone nodules. The points were salvaged but later misplaced.

The motel owner took rough measurements of the skeletons in situ and upon his chart he indicated the position of the two points and the pile of limestone nodules. Upon completion of his chart he had the skeletal remains shoved into a low spot over which the motel was later built.

Two years passed before the writer was notified of this incident. Upon investigating, he was told that the owner while digging for a septic tank came across a hearth area 8 feet below the present surface in which was a mass of charcoal. Found in association with the burials, alongside the hearth were small heaps of stone chips of the same material as the points were made of. Neither the charcoal nor the chips were saved for examination. Thus was lost another concrete link in the evidence of Early Man in this part of Virginia.

Fluted points found in this same region and from nearby areas fall into a generalized pattern but vary as to overall length and width.

From actual measurements it has been found that the lengths may vary from 33 mm. to 102 mm., but only in a single instance the overall length measured 137 mm.

Careful records have been kept of all of the fluted points recovered from Virginia and northern North Carolina. When measurements of these points were compared with those from the West it was found that the eastern forms were thicker, shallower based, and resembled in general outline such forms as the Clovis, Folsom, and Eden points. At the present writing 131 fluted points have been recorded as coming from southern Virginia alone. The majority of these were recovered from Mecklenburg, Dinwiddie, and Bedford Counties. Sixty-five fluted points have been reported from Granville County, N.C.

The Williamson farm site, a knapping site in Dinwiddie County, Va., has produced artifacts similar to those recovered from the Lindenmeier deposits in northern Colorado. Both assemblages appear to belong to the same cotradition in that this site produced not only fluted points but snub-nosed scrapers, side scrapers, fluted basal ends of knives, and several implements which resemble gravers. The points lack the fine flaking so characteristic of the western Folsoms, and the flaking appears to be only fair. The flaking technique is that of percussion as indicated on several of the larger blades and broken basal parts of large knives, as well as on several of the smaller implements. Pressure flaking was used on the edges of the finished scrapers, on several of the small blades, and on the fluted points. Large numbers of flakes are faceted as the result of previous flaking and several of them display striking platforms, together with a rather prominent bulb of percussion. Both the Paleo-Indian and the Neo-Indian remains occur at this site. The latter is represented by quartz and quartzite artifacts, which are strangely and entirely lacking in the earlier horizon.

Pickle (1946) reported a Folsom-like arrowpoint and artifacts made of fragmentary mastodon bone in southwest Virginia, an area not too far distant from the one under discussion. Lewis (1947) and Woolsey (1950) later elaborated upon these finds in which mastodon bone fragments were utilized as tools.

Recently, Folsom and Clovis points have been reported from Marshall, Jackson, Madison, Lauderdale, and Morgan Counties in northern Alabama, and Franklin County in Tennessee, but not in context.

Webb (1951) reported an assemblage of artifacts from the Parrish site, Hk45, in northwestern Kentucky, which has been attributed to the Paleo-Indian. Like all of the other eastern sites there was no definite stratigraphy nor could such a feature be determined even after the site was carefully excavated in 6-inch levels. Separation of cultural remains was made solely on the basis of typology. Bone, either as discards or artifacts, was at a premium due to the former treatment of the site during prehistoric and historic times.

Witthoft (1952) recorded similar points from the Shoop site in Pennsylvania and upon the strength of these findings he advanced the theory that these points were much older than those located at the Lindenmeier site. Krieger (1954), on the other hand, does not agree with Witthoft's thesis but indicates that the triple flaking of the fluted area may be a retrogressive trait rather than an early technique and may not be indicative of anything since there is a large variation within the projectile assemblage of a single group, which has been ably demonstrated by the Naco finds (Haury, 1953). Whether all of these points can be classified as Clovis must await further study, since there is a great variation in the overall length, width, and chipping technique, and at the present time it would appear that both forms are coeval.

Three of the sites in the John H. Kerr Reservoir Basin produced not only fluted points but gravers, snub-nosed scrapers, scraper-burins, choppers, and a well fashioned coup-de-pong. Associated with this assemblage are a number of pentagonal points which incorporate certain characteristics commonly found in Folsom points. These forms are thin in cross section, fluting on one or both faces, secondary rechipping, and are usually found on sites contributing typical fluted points. Corresponding forms have been found at the Williamson's site and have been linked by Miller (1948) with an Early Man complex.

Earlier, Bushnell (1935, pp. 35–36) described a similar point by stating that—

> a pentagonal point found north of Elys Ford, Va., was discovered on the highland east of the road, about a quarter of a mile north of Elys Ford. It is of a dark, slightly mottled yellow jasper. Like the Folsom they may be widely scattered east of the Mississippi although not numerous in any one locality. . . . The relation of the two types, if any actually exists, has not been determined.

Other pentagonal points, resembling the one described by Bushnell, have been recovered from sites in Mecklenburg, Amelia, and Charlotte Counties in Virginia. One of these points in particular is fluted on both sides. The flute on one side was made by striking off triple flakes, resembling in a broad sense those points of Witthoft (1952, pl. 1, No. 18), while two of the other points still retain vestiges of small "striking platforms" within the slight concave base.

These pentagonal points have been skillfully clipped, showing very fine secondary rechipping along the edges, and range in size from 1 inch to 2$\frac{1}{16}$ inches in length and from $\frac{3}{4}$ of an inch to 1 inch in width.

Just what affiliations these points have in common with the Folsoms of Virginia cannot be positively ascertained. Whether they are late variants of the Folsom concept or they represent retained ideas coming down to a much later culture and slightly modified can only be postulated. One would venture that this form is later than the accepted Folsom but with a definite tie-in technologically. One thing seems relevant and that is that they are post-Folsom and preceramic in cultural concept and date near the close of Early Man and the beginning of the Archaic.

Coe (1952), on the other hand, has found a number of pentagonal points which he has assigned to his *Peedee culture* on the Yadkin River. The only thing they have in common with the Elys Ford point is their general outline. Outside of this the North Carolina points are much thicker in cross section, mediocre in chipping, blunter or shorter in overall size, and do not belong in the same general time scale as those referred to above.

Then, we have a third type which is long, slender, and roughly lanceolate possessing a short receding stem, diamond shaped in cross section and at times called "diamond-shaped." Obermaier (1924) and others have attributed a corresponding shape to Early Man and placed it in Solutrean times of southern Spain, but this does not necessarily connote a comparable date for the similarly shaped points of southern Virginia, but it does indicate a certain technological affiliation. Harrington (1933) found these same shaped points in Gypsum Cave and he placed them in late Pleistocene or Early Recent times. He stated:

> In the Eastern States, we have evidence indicating a fair degree of antiquity for the lozenge-shaped or Gypsum type of point. I have found them myself in the lowest levels of shell heaps about New York City, and it is interesting to note that Skinner (1917) agrees with me in considering this "Diamond" shape to be archaic.
>
> This type appears again in Georgia under conditions indicating age, associated with what has been called the "Stallings Island Culture" which William H. Claflin, Jr. (1931) says, basing his conclusions on stratigraphy, "precede the makers of paddle-stamped and other types of Southeastern pottery in the Savannah River Valley." The "lozenge" or "Gypsum Cave" type of point is second in point of abundance here. Claflin thinks these may have been attached to atlatl darts, and in fact he illustrates an object of bone or antler which resembles the spur or crochet-end of an atlatl, but is not so described by the author.
>
> . . . , I think I have cited enough evidence to show that the "lozenge" or "diamond" type of point, of which the Gypsum Cave style is a variation, while not so old as the "Folsom" type, is one of the older forms characteristic of North America. It is my opinion that while in some regions it gave away entirely to the side-notched dart-point, considered in the Southwest to be typical of Basketmaker culture, in other places it lasted until the introduction of the bow-and-arrow rendered darts and dart points obsolete. That this change from one type of weapon to the other did not take place all at once and everywhere it is suggested by such finds as Lovelock Cave, where an overlapping is indicated, and by the fact that some people, such as the Aztec and the Eskimo, used both atlatl and bow up to the coming of the whites.

> Even the Maya, if Joyce (1927) is right, used the Gypsum Cave form of dart point, for he illustrates some typical Gypsum Cave points and calls them "Maya spearheads from British Honduras."

Coe, on the other hand, has assigned points with similar configuration to his Morrow Mountain II culture with a tentative culture date of around 2500 B.C.

Parallels cannot be drawn at this time inasmuch as geological studies, particularly in relation to dating the various finds attributed to Early Man, have not been made, as far as the writer knows, in the Piedmont section of Virginia and North Carolina. There is a rather noticeable range in size in this Gypsum Cave form and it has been found to vary from 1⅛ inches to 3⅛ inches in length, while its greatest width is more or less constant, being fifteen-sixteenths of an inch in extent. All of the Virginia specimens were made of chert. Some of them display well-worn and deeply oxidized surfaces in that the cortex has undergone a certain physical change, both as to composition and color, involving a time factor. Others show sharply chipped surfaces and very little if any physical change in the cortex.

This extreme surface "oxidation" does not necessarily indicate or argue for any great antiquity, for there are certain factors which must be taken into consideration: soil conditions and the chemical content of the stone itself, which would tend to play a major role in the physical reactions that take place on the surface of certain artifacts. Before any great age can be attributed to or assigned to these heavily "patinated" artifacts, a study must be made of the soil and the catalytic action which must take place on the surface of certain types of stones to determine, if possible, the rate of penetration of those oxidizing agents.

Elam Service (1942) and Winchell (1913) made a series of studies on lithic patinations and weatherings as an age criteria, and both have come to the conclusion that the term "patina" has been loosely used in a warped sense in archelogical literature. Weathering and oxidization actions have almost obliterated all of the fine, sharp angularities featured by the fractured chert artifacts, but the coarse angularities produced by the intersection of the fracture planes are not entirely destroyed. Even the edges of the artifacts, in a number of instances, have been smoothed by this same action. Several of these artifacts have been subsequently rechipped and a distinct color difference is shown in the coloration between the old cortex and the newly worked surface, in that the weathered surface is light buff or gray contrasted with the freshly worked surface, which is a dark bluish black or a deep buff. This change varies both as to degree and depth of penetration. Cross sectioning of the various weathered artifacts, by breaking them in half, shows that there is a thin outer covering of lighter material completely surrounding the artifacts that can be measured macroscopically.

Several of the points recovered from the surface of 44Mc27, an Archaic site, resemble the "Manzano" point as illustrated by Hibben (1941). It is surmised that the Manzano point is probably an offshoot of the Gypsum Cave type, or made shortly thereafter, and without a doubt there must be a definite correlation between the Gypsum Cave and the Manzano types—the two may be coeval in the latter phase of Gypsum and early phase of Manzano.

Four other projectile types, possessing smoothed bases resulting from some abraiding technique, are similar to those illustrated by Witthoft (1947) and McCary (1946) who assigned them to a late manifestation of the Archaic or an early manifestation of the Woodland. These points came from two Archaic sites, 44Mc24 and 44Mc27, in Mecklenburg County, Va., and bear strong resemblances to certain early Woodland forms in the Brewerton and Vosburg Foci of the Laurentian Aspect of New York. Witthoft has suggested that the smoothing was probably accomplished by rubbing with a slip of gritty shale across the sharp edges of the chipped flint to dull the sharp edges. "It seems apparent that this smoothing is a deliberate attempt to dull the sharp edges of the flint where it would be in contact with the lashings, rather than wear resulting from the use of the point as a scraping instrument or from abrasion by loose lashings." Ritchie (1940) also reported similar points from the extreme base of at least one site of the Brewerton Focus, and as far as is known similar points have not been reported from any other New York sites.

Witthoft (1947) reported that most of these types occurred at the Donovan site of the Vergennes Focus in Vermont and suggested that this trait constitutes one of the traditions that entered into the complexity of Laurentian stone industries in prepottery (late Archaic) and early ceramic (early Woodland) horizons.

Just when did these forms enter into the general cultural scheme of southern Virginia is not known at the present time. It is felt that they represent a number of the early types which must eventually be inserted into their proper time space. Their presence represents a possible subsequent peregrination of peoples predating and postdating the Folsom tradition and represents an adaptation to the ever-changing ecological conditions brought about by new environments and certain other economic changes.

Similar points have been reported from sites along the eastern seaboard and none of them are overly numerous in any one locality. They, too, must be inserted into their proper niche either by (1) occurring undisturbed in stratified archeological deposits, (2) dating by geological means, or (3) dating determined by the radiocarbon tests.

There is still an unaccountable hiatus in Virginia between the early lithic cultures and the introduction of pottery making. Roberts (1942 b, p. 27) most ably accounted, to some extent, for this fact by stating:

> The consensus of many is that there was an actual interruption in the stream of migration flowing from the Old to the New World and that for a time vast stretches of the western Plains and the Great Basin were uninhabited; that the first people had pushed on southward and into Middle America, although traces of them have not yet been found there, and those who were following had not yet arrived.

Whether the remains of the Tepexpan Man and the Midland Man may indicate in a way this early migration into Mexico and Middle America cannot be proved at this time.

The remaining projectile types fall well within the range of the forms usually assigned to both early and Middle Woodland periods with a few small isosceles triangular forms attributed to the Late Woodland and Mississippi cultures.

Several gravers recovered from 44Mc72 conform somewhat to the classification as set up by Wright (1940). One in particular can be classified as belonging to Type Ib, as it was made from a fortuitous chip or flake exhibiting a dorsal ridge that tapers out to an edge, secured by a short sharp point, and is triangular in cross section. Other edges of this same tool have been fashioned into side scrapers, making a combination tool out of a single large flake.

A second type, from this same site, conforms stylistically to his Type II, which is the chisel graver, and is made very much in the same manner as Type I with the exception that the point is broader, usually straight across the end with the cutting edge beveled to impart a chisel effect to the blade. The protrusion is longer than in Type I and at the same time it is convex. Similar to Type I, this type has a flat undersurface which accounts for its classification as a unifaced tool.

A third type, Type III, differs from the others in that it lacks the flat undersurface of an unworked chip but has all faces worked into small drill or borer shape, which is much too short to serve as such.

Gravers of Types Ia and Ib could be used in tattooing, as suggested by Roberts (1936 a). They could also have served as the tool used for decorating the outer edges of the bone disks found at the Lindenmeier site.

Gravers are not limited to the Folsom culture, in age or in distribution, as they have been found accompanying much later cultures. Wright (1940, p. 34) has stated:

> Evidence seems to point to the fact that gravers have practically covered the known span of man's existence in America. They, or evidence of their use, have been found with some of the supposedly most ancient cultures in the Southwest.

> Their distribution seems to be limited to the western portion of the United States and Canada.

At that time, it probably was true, for that is the only place they had been found, but this situation no longer exists as they have been reported from many sections east of the Mississippi River and along the Atlantic coastline. The distributional statement will now have to be modified as the present finds, coming from eroded surfaces of sites, have been definitely found outside of the range as specified. Similar artifacts have probably been seen by both professional and amateur collectors in the past, but not being acquainted with this form of artifact they were either discarded as artifacts or disregarded. Now that these artifacts have been reported as coming from the East, it is likely that additional information will be forthcoming indicating their distributional pattern.

There are various types of scrapers represented in the collection: snub-nosed, thumbnail, and side-scrapers. The only difference between the snub-nosed and the thumbnail is size. In actual shape, technique of fashioning, and use they are identical. These types are all Folsom complex adjuncts, but they must not be confused as belonging exclusively to that cultural complex. Such forms are timeless, for they have been recovered from sites in the Plains which are protohistoric, as well as from those assigned to an early period.

We have encountered considerable variation in the overall general shape of the snub-nosed scrapers; some are roughly rectangular in outline while others are roughly modified ovoids. Some have flat bases, others are concave depending upon the type of flake and the size of the nodule or core from which the flake was initially struck, while others are slightly convex. The conchoidal fracture is still very evident on some but on others this feature is missing. Some still retain portions of the original siliceous crust or outer coat of the nodule from which the flake was struck, while others appear to be the hasty handiwork of the maker, and some are very carefully fashioned, indicating considerable attention was given the styling of the tool.

One side-scraper with a concave cutting edge appears to be similar to one illustrated by Roberts (1935 e) with the exception that the Virginia specimen is somewhat smaller. This specimen, fashioned from a fortuitous chip—the narrow portion still retaining a part of the original siliceous crust—is of yellow jasper and possesses two concave cutting surfaces on the same side. Opposing these is an edge having a double beveled effect.

Scrapers range in length from 2.9 cm. to 6.7 cm. and in width from 1.7 cm. to 3.9 cm., while thickness depends entirely upon the original thickness of the flake from which they were made.

Other artifacts in the Archaic assemblage are knives, axes, drills, adzes, celts, discoidals, hammerstones, nutting stones, turtlebacks, abraiding stones, and steatite potsherds. Flint, quartz, quartzite, chert, and jasper were used to a great extent in the manufacture of these objects. To a lesser extent they made use of slate, chalcedony, quartz crystal, limestone, argillite, and steatite. Most of these stones are brittle by nature; they fracture with the minimum amount of force, resulting in conchoidal features when the breaks are true. When the break does not result in conchoidal features, there is some internal fault in the stone itself. When such a stone is chipped the results are not always desirable and so the artifact is discarded by its maker as being inferior in form and execution.

Several of the small irregular-shaped schistose slate slabs bore scratched geometric patterns upon their surfaces. Similar ones have been reported as coming from the Badin site near Flagtown, Montgomery County, N.C.

Axes are rare in the whole reservoir area. Those that have been found are crudely chipped, have opposing notches for hafting with moderate cutting edges, and are made from natural flat pieces of stone. No attempt was made to smooth or polish their surfaces. From these characteristics we would surmise that they were used as breaking tools rather than true cutting tools. None of them show extensive usage.

Discoidals, while present, are rare. From the few we found it appears that they were first chipped into the desired size, then were smoothed by pecking away the rough surfaces, and finally completed by grinding, which gave the artifact a smoothed surface. Some have slight depressions or concavities on either face.

Steatite sherds occurred at a number of the sites. They were of various sizes and shapes. Some were large enough so that we could determine rather accurately the size of the original vessel. Usually they were hemispherical with flat bases and some were furnished with rough, rounded, luglike handles or knobs which were opposing, but we did recover one that was roughly triangular in shape which was most unusual. All sherds bore tool markings on the exterior surface, while the interiors were smoothed but not always even. Several showed two or more perforations in juxtaposition, suggesting that at one time the vessel was either cracked or broken and later mended by inserting thongs through the holes to bring the two pieces together. At the present time a number of these sherds were coated on the interior with soot and the discoloration was driven into the walls for a short distance. From this, one would surmise that the vessel or vessels were inverted over a fire allowing the soot to accumulate. Why they would have been placed with the open mouth over a fire is beyond our reasoning.

We have found that steatite vessels were made and used during the Archaic, and this practice carried over to a small degree into the early part of the Woodland.

Harrington (1922) mentioned that fragments of steatite vessels have been found in association with the people of the "Round Grave" culture of the Archaic in the upper Tennessee, while Lewis and Kneberg (1946), on the other hand, state:

> We have found no evidence in Tennessee to indicate that the steatite vessel was used by any other than the Woodland peoples. On this (Hiwassee) and other sites the sherds occurred in association with the Hamilton Focus, and they have always been present on sites of the earlier Woodland manifestations, the Candy Creek Focus. On sites of the latter focus, they occur in greater abundance than on the Hamilton sites, but this can probably be attributed to the closer integration of the Candy Creek villages. Extensive deposits of soapstone were available about 140 miles to the eastward, and it is quite likely that the vessels were manufactured at the quarries in order to facilitate transportation.

Steatite deposits exist either in the basin or immediately adjacent to the reservoir. The largest deposit occurs only a few miles to the southeast of La Crosse, Va., on the Meherrin River and several aboriginal quarries are known to exist there. There are other deposits in Amelia, Albemarle, Bedford, Brunswick, and Goochland Counties in Virginia, all of which were easily accessible to the aborigines. Earlier, Bushnell (1940 b, p. 472) wrote:

> There are no known references in the early narratives to Europeans having witnessed the actual use of soapstone by the Indians, although it may have been known to the native tribes in some regions until contact with the whites.

Webb (1940, p. 66) and others found that steatite vessels do occur in Archaic sites in association with shell mound burials and "it would seem certain that a few vessels of sandstone and steatite were in use at this site long before pottery was known or used on this midden." Later Webb and Snow (1945) noted that steatite was rare in Adena sites but it does occur.

Pottery making was well conceived when first introduced into this section of Virginia. Such a bold statement is based upon the assumption that the technique by which fillets or coils of wet clay were "cemented" or "welded" together to build or fashion a vessel did not come into being full bloom overnight, but that much thought and experimentation had to be expended before it could become a reality. Coiling techniques, counter to modeling, not only proved to be better in fashioning vessels but also placed the potter in an advantageous position to control her materials so that she could vary the size and shape of the vessel at will.

The introduction of the art of pottery making in the John H. Kerr Reservoir basin in the late Archaic brought about practically no change, or very little change, in the existing cultural pattern. This trait was simply added to the then existing cultural pattern which continued to develop in its accustomed way—the Indians manufactured their typical stone artifacts, retained their hunting-food-gathering economy, continued to be nomadic to a certain extent, and continued to retain their vegetal, stone, and hide containers. The introduction of ceramics curtailed somewhat their roving habits, as these friable objects could not be easily transported without danger of breakage. Whether ceramics was the compelling force which brought into being the cultivation or pseudocultivation of the natural seed plants is not known, but it could easily have been the case. As they became more proficient in the use of clay and the practice of agriculture, this Archaic culture probably started the subdivision of labors depending upon the skill of the individual.

These first vessels, olla or jar shapes with wide-mouthed bowls, are characterized as having conoidal or subconoidal bases, slightly expanded, rounded or elliptical bodies surmounted with slightly constricted necks upon which rested straight, slightly flared, or expanded rims terminating in simple lips. This vessel shape became the "trade mark" of the Woodland Peoples, as they are now called.

Whether these Woodland Peoples represented an absolutely new influx into the area has never been determined satisfactorily. It is true that we have the beginnings of a new physical type, a change-over from a long-headed form to a more rounded type, but a comparable change has been noted to have begun during the Archaic before the actual introduction of pottery making and a new physical type. Noone (1934) has satisfactorily determined the locus of pottery making in the Americas. Theories and implications have been offered but concrete evidence is lacking. With the appearance of pottery making at a definite (?) time, which is a variable factor for different areas, this art spread throughout the New World. Ceramics were probably introduced into this section of Virginia around 1500 to 1000 B.C. (a guess date which is not based upon any concrete method of dating) from the northeast by diffusion of ideas or actual contact with a group of people who developed into what has later been called the general Algonquian stock.

Pottery, having such long-lasting qualities—both whole and fragmentary—served not only as the chief criterion of culture but also as a cultural indicator of changes within the overall subsequent cultural patterns. This was true up to the advent of white man and his trade goods. Trade goods soon arrogated the native article and in some areas the art was completely lost with time.

From early historical accounts, it was the function of the women and children, and occasionally men, to go to the various clay deposits to gather the raw clay which was to be fashioned into clay vessels. This was gathered in baskets, or similar containers. The large lumps of clay were pounded to reduce them to a dust and the whole passed through screens to rid the mass of any large stone and other extraneous materials. Before it could be used the necessary aplastic must be added, the whole dampened and kneaded to the right consistency, and then small chunks of this clay were taken and rolled into small ropes or fillets. These were coiled one upon the other with each coil pressed firmly onto the preceding coil. This reduced the roundness of the coil to a flattened affair and the whole was firmly cemented into a single unit. Large-sized vessels were not constructed at a single sitting but each section was allowed to "rest" and when sufficiently stable another section was added so that in time the whole was completed.

Counter to the coiling method is that of modeling where a lump of worked clay is punched or pinched directly into the desired shape. Sometimes a large potsherd, a shallow stone vessel or basket, or some other shallow receptacle was used as the supporting base while the vessel was under construction. Even in coiling a small portion of the base may be molded, while the rest of the vessel is shaped by the addition of fillets.

While still in the plastic state the entire surface was gone over to insure thorough sealing of all joints and to even or smooth both the exterior and interior surfaces. Further annealing may be attained by the impressing of various fabrics into the surface of the vessel. Such fabrics may be baskets, cloth, nets, rush mats, or even a corncob rolled over the surface. All of this took place before the vessel was allowed to dry and be fired in order to modify the nature of the clay. Occasionally a pebble was rubbed over the outer surface to bring the finer particles to the surface and to impart a rough sort of polish to the nonporous surface.

Firing was done either in the open or in a rough sort of kiln. In open firing the vessel may be burned to a black, brownish, or mottled buff color along with smoke-smudged areas better known as "fire clouds." Such a method brought about uneven firing, which was more or less haphazard since it could not be controlled, and the heat was driven only partially through the walls, leaving a darkened central core; whereas in the crude furnaces this was more under the control of the one doing the burning and a more even temperature to which the vessel was being subjected could be maintained. This resulted in a more uniform color throughout the vessel, both on the exterior surfaces and on the inside of the walls, and fire clouds were rarely formed.

There are sufficient clay deposits to be found throughout the area which are well adapted to the manufacture of clay pottery. These clays were "mined" and processed and utilized by the aborigines in their pottery making. Sand is the usual aplastic. The finer particles were used in the earlier wares and progressed to a coarser material during the Middle and Late Woodland stages. Grit, in the form of crushed quartz, quartzite, or limestone was notable for its absence. No crushed shell or crushed potsherds, known as clay grit, were used as aplastics in the reservoir area.

The earliest vessel to appear was in the form of a deep, wide-mouthed, flat-based bowl which was fragmentary. Only the one specimen was found. Shortly thereafter a number of large wide-mouthed ollas and deep bowls, both with conoidal bases, were made. These forms persisted throughout the span of aboriginal occupancy but there also occurred modified forms of these which began during the Middle Woodland occupancy and the Late Woodland groups. Modifications were made on the bowls so that they became shallower and the bases were rounded off to a certain extent. These changes were made during the Middle Woodland occupancy, but they no longer were made during Late Woodland times. Ollas, on the other hand, were modified during the Late Woodland by making the shoulder and neck more pronounced and the orifice constricted. Lip forms always remain on the simple side as they were made to be flat, rounded, slightly tapered, or a modified combination of these. Molded dippers were added to this assemblage.

Handles are exceedingly rare and are found only on jars. Those that appear are in the form of vertical appendages which have been pierced near the upper half and are appended either flush with the lip or a short distance below the rim and occur in opposing pairs. A few molded dipper handles were recovered which are either round or flat in cross section, crudely molded, and of varying lengths and sizes.

Miniature vessels are fairly frequent. They are either pot or dipper forms. Most of them have been molded, while a few of the larger specimens were constructed by using the coiling technique and were later impressed with textiles.

Practically all of the pottery recovered from the various sites within the basin was basically treated with some form of textile on the exterior. In a number of instances this was later obliterated to form a plain ware. Whether this procedure can truthfully be classed as a form of ornamentation is questionable, for it appears to be just one step in the final construction of a vessel, even though there may have been some ulterior decorative effects subconsciously harbored by the aboriginal potter.

In applying these textiles to the exteriors, and sometimes carrying them over into the throat of a vessel, the fabrics were placed either directly against the pliant walls of the vessel and then patted firmly into the place, or the vessel was inserted into a cloth bag, or within a piece of textile, and the vessel rolled or patted firmly to achieve the same result. In the former, large sections of the original fabric would be imprinted onto the exterior walls, which would show very little overlapping of impression, while in the latter the result would be one continuous pattern.

Textile roughening was achieved by balling up a small wad of textile and daubing it once or several times against the pliant walls, leaving behind a roughened imprint imperfect in detail, so that identification of the weave was practically next to impossible to determine. To further complicate matters the native potter would then partially obliterate this "stamping" and then treat the vessel with another type of fabric. Only with the use of modeling clay can one make out a positive element in the textile used on the exterior surface of a vessel thus treated.

Whenever lips were treated the outer margins were the areas to be modified. These modifications were in the form of incisions, abrupt ridges pinched into form, shallow grooves made by dragging a blunt or flat instrument in varying directions, and partial perforations made by impressing small grass stems or reeds or dull pointed implements into linear or other forms.

Occasionally we will find that the base of the neck or the top of the shoulder of ollas was ornamented. Usually these areas were treated with rows of indentations which best can be described as triangular pyramidal, semilunate, or just plain incisions which were cut into the clay with some sharp-bladed object. Only rarely was the clay of this region pinched into a series of parallel ridges, punctated, or indented with the fingernails. A comparable effect of the fingernail indentation was achieved by using a spatulate-shaped tool with a rounded edge which was dragged across the area and pushed into the soft clay at more or less regular intervals at an angle. Punctations, about the size and diameter of small grass stems and delimited by incised lines, were made with either hollow or solid objects. These were confined to the shoulder areas of jars. We found this treatment to be very rare.

Paired parallel trailed lines were rarely used. We found this treatment on a restorable jar which was first treated with a textile and the lines superimposed over this treatment. The lines started at the lip and trailed downward diagonally almost to the base of the vessel.

We must also contemplate the use of combing or brushing. It is a matter of semantics whether these can be considered a form of decoration or a step in the initial fashioning of the vessel. It was always applied after the vessel had received its initial textile or fabric treatment when it occurs on the exterior of vessels. When present it occurs in a series of narrow, shallow, parallel grooves that obliterate the underlying fabric impression and cover varying sized areas. It is suspected that this treatment resulted from the use of serrated stone or bone tools. Combing occurs on the interiors of vessels, so with this in mind combing should not be classed as a form of decoration.

Recapitulating we can say that the earliest pottery, the Hyco Series, was introduced during late Archaic and Early Woodland times in the form of a plain ware out of which developed a fabric-marked ware. This in turn evolved into three new wares: net-impressed, cord-wrapped-paddle, and textile-impressed.

Shortly thereafter there was a bloodless invasion of another group of people who introduced the Clarksville Series resulting in a change in the nature of the paste and firing methods. The textile-impressed ware introduced during the early Woodland phase now became the dominant ware, and it was trailed by fabric-marked with cord-wrapped-paddle bringing up the rear. Not long thereafter the technique of combing or brushing was introduced and plain ware was manufactured only sparingly.

By Late Woodland times the textile-impressed still remained the dominant form and fabric-marked was manufactured to a limited extent. Cord-wrapped paddle disappeared almost completely and a new form, corncob-impressed was beginning to make its appearance when the area was abandoned by the aborigines. By the time the first white settlers came into the valleys of the Dan and Roanoke, in the vicinity of the basin, it was devoid of Indian villages.

CONCLUSIONS

Early Man, who had arrived in the New World during the Pleistocene and after the last of the great glaciers, preyed on the larger animals that occupied this continent. Not only did he hunt the mammoth but the bison, camel, and horse, as well.

During the close of the Pleistocene a climatic change was effected which brought with it a gradual diminution of the floral content, which in turn resulted in the extinction of the larger of these faunal forms. It disturbed the fundamental balance of nature bringing about an increased competition not only between groups of humans but between the remaining animal life.

As man increased in numbers and the sources of food supplies became scarcer, competition grew keener and the favorable areas became more noticeable and desirable. This condition caused men to aline themselves against their common competitors bringing into formation a nucleus of clans, tribes, or nations, a process very much in evidence at the time of white man's arrival to the shores of the New World.

In the interval between man's coming to the New World and the arrival of the white man he passed through various cultural stages, one of which was the Archaic. During this time he was still devoted to his nomadic habits, depending upon his skill as a hunter and a gatherer to sustain life. With a new influx during the Early Woodland when the concept of pottery making was introduced, his life enriched somewhat at first and then a restriction was placed upon his roving habits, reducing the range over which he might roam with his new possessions, or worldly goods.

As pottery making gained in momentum in the subsequent cultures, during the Middle and Late Woodland times, he was compelled to settle for still more limited areas over which he could transport these friable objects without damage.

In these intervals man managed to gain a certain amount of leisure time, which is the main factor that released him from a creature stage and placed him on a level from which he could look about him and devise certain traits, such as division of labor, the development of a priesthood, and a resulting religion. These, in turn, developed a certain caste system in which evolved a chief, a medicine man, prophets, as well as skilled workmen.

The people who once occupied this portion of the Roanoke and Dan River valleys first came into the area as Early Man, who roamed the upland area. He in turn developed, after the ecological change, into the Archaic during which time life was harder and he had to do more thinking to be able to survive. Communication between groups was started and the Archaic was brought to a close with the introduction of pottery making and the inception of agriculture, and the Woodland culture had its start.

Apportionment of labor had its inception about this time and this in turn released leisure time and the rise of religion with its various implications and ramifications through a society. In time limited agriculture was practiced, and the bow and arrow supplanted the throwing stick and dart.

At no time in the aboriginal history of the reservoir area was the culture very complicated or developed. Fortified villages were unknown and hence the strain of competition between groups was still rather mild. Houses or shelters were not very stable and for this reason they failed to leave behind any traces of themselves. Food gathering, hunting, and fishing, particularly for shellfish, still formed a major role in their lives. They practiced limited agriculture and therefore only scant remains, in the form of charred beans and corn, were found in the areas investigated. All in all, their material culture was not too worldly.

The impetus of culture appears to have flowed in from the north and northeast with the earliest of the Algonquian cultures and to have met an oncoming impetus out of the south and southeast just beyond the borders of Virginia and North Carolina. Instead of the commingling of cultures, there was a sharp rebound or backwash enrichening of the two cultures as they retraced their way northward and southward. The cultures of southern Virginia showed this definite trait in that there was further refinement that is not manifest in those cultures to the north of the area under study. All of this took place before the depredations of the Iroquoian groups while on excursions in this area and the areas to the west within the Shenandoah Valley.

Archeological evidence bears out the statements made by early travelers that the area was very scantily settled by Indians when visited by white men. Apparently this whole portion of the Roanoke Valley was practically deserted for reasons not manifest within the remains of their various settlements.

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APPENDIX

HUMAN SKELETAL REMAINS FROM THE TOLLIFERO (Ha6) AND CLARKSVILLE (Mc14) SITES, JOHN H. KERR RESERVOIR BASIN, VIRGINIA[1]

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INTRODUCTION

Two sites in the John H. Kerr (Buggs Island) Reservoir Basin, excavated by the River Basin Surveys between 1947 and 1951, yielded human skeletal remains during the last 2 years of this period in quantities large enough to justify description. The Tollifero site (Ha6), named for the 18th-century family which built a house directly on the site of an old Indian village, lies on Occaneechi Island in the Roanoke River, in Halifax County, Va. Opposite Occaneechi Island, on the north shore of the river, in Mecklenburg County, lies the Clarksville site (Mc14), named after the nearby town of this name. These sites are about 200 river miles north of the mouth of the Roanoke River, and about 40 river miles north of the Virginia-North Carolina boundary line.

Although these two sites are geographically and ecologically related, a considerable time interval separates them. Tools made from the bones of bear, beaver, duck, fox, deer, and elk, as well as remains of fish and mollusks, occur at both sites. Only at the Clarksville site, however, are there traces of corn, beans, and tobacco. Pottery and other cultural remains also differ significantly at the two sites, indicating not only a different archeological horizon, but a different way of life. Miller assigns the Tollifero site to either the Late Archaic or Early Woodland, suggesting that it was occupied at sometime between 1000 B.C. and A.D. 500. The Clarksville site was apparently occupied during Middle to Terminal Woodland times, or, sometime between A.D. 800 and 1630. The Tollifero house, as stated above, was built directly over the site to which it gives its name. Associated with this construction, there were pipe lines, refuse pits, and other excavations which disturbed the underlying deposits. Although the Clarksville and Tollifero peoples undoubtedly contributed the majority of the skeletal remains found in this area, occasional burials may antedate or follow these major occupations. Among those recorded as living in the area later by Lederer (1958) and others, were the Occaneechi themselves, together with the Sapelo, Tutelo, and others. Purely for convenience, when the term "Occaneechi" is used in this report it refers to the Clarksville and Tollifero peoples only, in distinction to groups living in other areas, and not to the historical Occaneechi tribe itself.

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[1] During the summer of 1958, Bass examined the available skeletal remains, measuring them and recording certain observations. The data which he obtained were incorporated in a report on the results of his studies. Later Miss Hoyme was asked to reexamine the collection, to expand the metric data by restoring and measuring additional bones, to make supplementary observations, and to prepare a more comprehensive report. During the writing of the present report, the junior author was in the field and unavailable for consultation. As a consequence the final presentation of the material, comparisons, and conclusions are Miss Hoyme's.

Chronological and cultural differences, such as those separating the Tollifero and Clarksville sites, are, in the Southeastern United States, often accompanied by physical differences in the peoples occupying them. It has been said, for example that the earlier peoples were more longheaded than the later peoples in the Southeastern United States. Do such differences distinguish the populations at these two sites? Are there, perhaps, other differences in the skeletal remains—evidences of pathology, deformation, or injuries—attributable to differences in diet, or way of life? Do the bones themselves tell anything of changes in burial customs? Finally, is there skeletal evidence at the Clarksville site for European contact? It is known that Lederer visited "Ocaneechee" villages in 1670 (Lederer, 1958); was this one of them? Or were there earlier contacts with Europeans by way of the Roanoke River? Was the site abandoned before the arrival of the first Europeans in the area, or, despite the absence of trade goods, did it survive, for a while after their coming? Is there any skeletal evidence of the immigration of Indians of other tribes, as recorded by early writers for this area (Swanton, 1946)? To answer these questions, we will compare the two populations at these geographically adjacent sites, first with each other, and then with appropriate Southeastern skeletal series, to see what differences exist, and then, in the light of what is known historically, to attempt to interpret these differences.

MATERIALS AND METHODS

The Clarksville site, as Miller designated site Mc14, was excavated during the summer of 1950. This work was of an emergency nature, as heavy earth-moving equipment was already cutting into the site.

Approximately 80 burials were recovered. The following year, Miller excavated the Tollifero component, site Ha6, on Occaneechi Island, recovering about 43 burials. At the close of this season, the skeletal material was transferred to the Division of Physical Anthropology, U. S. National Museum, where it was cataloged under the supervision of Dr. Marshall T. Newman, associate curator of that Division. At that time, Newman made preliminary observations on the collection, estimating age and sex. During the course of cataloging, a number of specimens were discarded as being too fragmentary to merit preservation. Catalog Nos. 380842–889 were assigned to the 48 skeletons from the Clarksville site (Mc14), and 380890–919 to 30 lots from the Tollifero site (Ha6).

During the summer of 1958, the skeletal material was examined more fully by William M. Bass, a member of the staff of the River Basin Surveys. Bass measured the adult crania and long bones, reevaluated the evidence for age and sex, and described some of the individual features of the skeletons. Finally, during the summer of 1961, the collection was reexamined by Lucile E. Hoyme, of the Division of Physical Anthropology, United States National Museum, in order to prepare a final report for publication. It is only natural that these various anthropologists, with differing backgrounds and degrees of experience, working under quite different circumstances, should differ occasionally in their interpretation of the evidence for age and sex. It should be noted, then, that the ages and sexes given by Miller in his archeological report, are based on his initial field records, and differ occasionally from those given here. The physical anthropologist, working in the laboratory, with cleaned and restored materials, has a considerable advantage over the archeologist working in the field. Unfortunately, revised determinations were not available to Miller at the time his report went to press, so he had no opportunity to make the necessary corrections in his data.

A few more serious discrepancies will be noted between the descriptions of the individual burials in the following pages, and those given by Miller. These are due to confusion in the field numbers, either in the laboratory, during cataloging, or in rearrangement of Miller's data during his analysis. Although it would have been preferable to correct these errors, it has not been possible. They are few enough in number, however, to have little effect on the conclusions of either the archeologist or the physical anthropologist.

In the study of the skeletal remains, we have followed a more or less uniform procedure. After determining age and sex, as outlined below, the skull and mandible were examined, and measured. Although some of the skulls could not be restored sufficiently for measurement, it was often possible to tell from inspection of the incomplete vault whether the skull had been longheaded or roundheaded, and whether or not it had been deformed. Any unusual features of the vault were noted at this time. The next step was the examination of the teeth, for caries, degree of wear, or other significant variations. Tooth wear was recorded as first to fourth degree (see ftn. 5, p. 351). When a tooth was missing, abscess or other inflammatory change in the alveolus was interpreted as evidence of caries or other dental pathology; and signs of alveolar healing as evidence of loss of the tooth before death. In the absence of such changes, it was presumed that the missing tooth was probably healthy and had fallen out after death.

Next the rest of the bones were examined for pathological lesions, injuries, arthritis, anomalies, or other deviations from normal size or form.[2] Absence of any comment, therefore, may be taken to mean that nothing unusual was seen, or if seen, was so slight as not to deserve notice. Some of the descriptions are not as precise as would be desirable. Damage to the ends of long bones occasionally made it impossible to tell whether a particular bone came from the right or left limb; and absence of parts of the vertebral column and rib cage prevented more than a general identification of the vertebra or rib being described. Finally, when certain features occurred in a majority of specimens, these are described under the appropriate heading.

Age determinations in the children were made on the basis of tooth eruption, where the skull and jaws were sufficiently intact to permit this; otherwise, on the basis of size. After the completion of tooth eruption, age determinations had to be made on the basis of epiphyseal union, changes in the pubic symphysis, appearance of arthritis or other signs of aging. Although the determinations are not exact, they are accurate enough to permit dividing the series into infants (birth to 3 years), young children (4–6 years), older children (7–12 years), adolescents (13–17 years), subadults (18–20 years), young adults (21–35 years) and middle-aged adults (36–55 years). Some of the skeletons of indeterminate age may have belonged to old adults (over 55 years).

Before adolescence, sex cannot be determined with accuracy. In older adolescents and adults, sex was determined on the basis of the pelvis, where present; and on the basis of skull features, general size, and gracility where no pelvic parts were present.

Bass' method of measurement was not stated; presumably he followed Snow's methods. However, a spot-check by Hoyme indicates that the cranial and long bone measurements deviate only a millimeter or two from those obtained by Hrdlička's techniques (1952). Thus for all practical purposes, it can be stated that most of the cranial measurements were taken by Hrdlička's methods, using sliding or spreading calipers. Long bone measurements were taken with the osteometric board; all lengths are maximum, unless otherwise stated; tibial midshaft diameters are maximum and minimum. Most of the measurements were taken by Bass; a few supplementary measurements taken by Hoyme have been included.

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[2] It is not always easy to distinguish between "pathology" and "anomalies." In this report, "pathology" will be used to designate some inflammatory process, as evidenced by altered bone texture, whether resulting from nutritional deficiency or caused by local injury or general systemic infection; "arthritis" will be considered to mean the normal wear and tear on joints, usually a concomitant of aging, disregarding the fact that some arthritides are of pathogenic origin; and "anomaly" will be used to designate those apparently normal developmental variations, which seem unrelated to disease.

Taking X-rays of selected long bones, to obtain a clearer idea of the nature of the pathological changes present, was the final step in the examination of the Occaneechi bones. Except for a few apparently normal bones for comparison, X-rays were restricted to skeletons which showed some external evidence of pathology. In skeletons in which the skull showed traces of osteoporosis, anteroposterior and lateral X-rays of all long bones were examined for lines of arrested growth, deviations from normal in thickness and density of cortex, or other evidence of disturbance in growth. Skeletons in which one or more bones showed localized swellings and abnormalities in shape of shaft or in cortical structure presented a slightly different problem. Here the objective was to determine the extent and nature of the structural alterations in the immediate vicinity of the visible lesions, and whether the other bones of the skeleton showed structural changes despite their apparently normal appearance. In these cases all the long bones were laid out for anteroposterior and lateral views, and the pathological bones were rotated slightly where necessary to obtain tangential and vertical views of the lesions. All the films were made in the Division of Physical Anthropology at 65 KV, with a tube-film distance of 30 inches, at 10 MA, varying time so as to avoid overexposure of the thinner bones. After uniform processing, the films and bones were examined together, to determine the extent, location, and nature of the changes in the thickness and density of the cortex, and whether or not the form and structure of the medullary cavity had been altered. (Since most of the bones which appeared normal superficially or showed only changes in surface texture appeared normal radiologically, it did not seem practical to X-ray the remaining "normal" bones in the series on the off chance of finding hidden evidence of pathology.) After this preliminary examination, the films and a selection of the bones were examined by two pathologists with long experience in clinical and dry-bone osteopathology. Their comments and interpretations have been of considerable value in preparing both the descriptions of the individual skeletons and the section on "Health and Disease."

In the descriptions that follow, it should be noted that not all of the data come from our examination of the cataloged collections. Miller's field notes provided an invaluable source of information on stratigraphy, type of burial,[3] condition of the bones when found, and the nature of the material which had to be discarded in the field. Newman's inventory of the collection, filed with the accession records, supplies additional information on the age and sex of the material discarded after processing in the laboratory. Thus, discussion of population composition is based on the whole of the material recovered, rather than on the 60 percent preserved; and interpretation of the skeletal evidence on cultural practices is more reliable.

DESCRIPTION OF BURIALS

TOLLIFERO (Ha6) BURIALS

Burial 1 (*USNM 380890*).—Adolescent, 12–15 years old. This undisturbed secondary burial consisted of a skull cap containing the face and jaw, resting on a pile of long bone fragments. The shafts of a humerus, radius, a pair of femora, and two (possibly three) tibiae, are recognizable after considerable reconstruction. Also present are fragments of the clavicles, a few ribs, and the scapulae. None of the bones can be completely restored because of the large number of pieces missing. The bones present and the pattern of the cracks (pls. 104, 105), suggest deliberate breakage before burial, possibly to obtain the marrow. The skull had also been broken deliberately, and many pieces are missing.

The maxilla and mandible show an area of porosity, corresponding approximately to the upper and lower lips. The lower half of the femoral and the entire tibial shafts are thickened and porous, and surface details are obliterated, so that it is difficult, with so many fragments missing, to tell whether or not one large section of shaft goes with one of the leg bones. The clavicles are also thickened, and one end of the fragment of humerus is somewhat thickened. Not enough of the humerus is present to tell whether this slightly thickened bone represents beginning inflammation, or the margin of a more severely affected area. The other bones show no inflammatory changes.

The inner and outer surfaces of skull and the surface of several of the long bones show some peculiar small, shallow pits. Although one or two of them may represent vascular enlargements associated with the inflammatory changes elsewhere in the skeleton, the majority suggest marks made by irregular points or blades in separating the tissues from the underlying bones. Similar marks are found on the long bones of other skeletons, both from this site and from Clarksville. They will be discussed more fully in a later section on burial customs.

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[3] In describing burial position as "flexed" or "semiflexed," Miller's field sketches have been followed rather than the verbal descriptions in his notes. "Flexed" has been reserved for those skeletons in which the sketch shows the legs and thighs quite close to the trunk, and "semiflexed" for the burials in which the legs are more loosely flexed. The significance of the skeletal position, and the necessity for this alternative interpretation of Miller's notes will be discussed further in the section on "Burial Practices." Although both sites seem to represent a single occupation, a few burials at each were recorded by Miller as possibly referable to an earlier population.

The parts present indicate that the skull is long and fairly high, like those of the adults in the collection. Sexual characters are not yet developed because of the youth of the individual. Height, judging from the femoral fragments, was probably normal for this age group.

Burial 2 (*USNM 380891*).—Male, 35–40 years old. When this nearly complete semiflexed skeleton was found, there was a quartz projectile point in the chest cavity (pls. 83 and 97).[4] Unfortunately the ribs are not well enough preserved to tell whether or not a penetrating wound existed. Thus it is not possible to say whether the projectile point was the cause of death or an accidental postmortem inclusion.

The only signs of aging in the skull are third degree wear of the teeth; and, postcranially, slight lipping of the anterior margins of a few vertebral bodies (C6, T8–11, L4–5). Although none of the teeth are carious, the considerable wear is accompanied by extensive alveolar resorption and enlargement of the alveoli of the lower molars. The shafts of the femora, tibiae, and fibulae show slight traces of long-healed inflammation.

Burial 3 (*USNM 380892*).—Male, 30–35 years old; flexed skeleton, complete except for loss of the face and mandible and damage to right elbow and hip by an 18th-century pipeline. The skull vault is the roundest and highest of the crania from this site; and the bone, although well preserved, is rather light in weight. The vertebrae seem somewhat demineralized, and the femora and tibiae are markedly bowed anteroposteriorly. Other parts of the skeleton seem normal. A minor anomaly is a small tubercle on the dorsal surface of a first phalanx of the foot.

Burial 3? (*USNM 380892A*).—Male, probably over 35 years old. A partial face and complete lower jaw, large and rugged, possibly from a burial otherwise discarded in the field. Heavy wear of teeth (grade 3) is accompanied by resorption of the alveolar borders and exposure of the roots. At least four of the molars were lost before death, and the others show the chronic periapical osteitis associated with heavy wear. Although some of the upper molars have slight tartar deposits, they have no caries.

Burial 4 (*USNM 380893*).—Middle-aged male (?). The skull was missing and many of the remaining bones were broken when this skeleton, a reburial, was found. Age is indicated by the slight arthritic lipping on the anterior margins of three of the lower thoracic vertebrae.

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[4] Plates 78–96, showing burial positions, accompany the archeological section of the report.

Burial 5 (*USNM 380894*).—The nearly complete skeleton of a newborn or very young infant, lying under burial 4 and somewhat mixed with it.

Burial 6.—An adult skull, in poor condition, which may have been part of burial 4; discarded in the field.

Burial 7 (*USNM 380895*).—Adult, male. This burial consisted of a small heap of broken bones, including cranial and femoral fragments from one or possibly two adults. All of these fragments, except a mandible, were discarded. The teeth of the mandible show third-degree wear, with resorption of alveolar borders, and large cavities on the interproximal surfaces of the molars and premolars. The caries and/or wear has led to periapical osteitis, loosening of the posterior teeth, and to the loss of the right first molar during life. The anterior teeth, although worn, show no caries.

Burial 8 (*USNM 380896*).—Fragmentary postcranial parts of an infant, 6–12 months old; the bones had been broken and placed in a small heap.

Burial 9 (*USNM 380897*).—Female, 35–40 years old; a nearly complete semiflexed skeleton, in good condition except for damage to the skull and lower legs. The fragmentary skull is long and rather high. Despite the extensive attrition (third degree), none of the teeth has been lost, or has shown caries or other dental pathology. The anterior margins of the body of the fourth lumbar vertebra show slight lipping, while lipping of the margins of the fifth lumbar vertebra is considerable. The ventral surface of the right pubis shows deep grooves (left pubis missing), attributed by Stewart (1957) to traumata of childbearing. The only other noteworthy features of the postcranial skeleton are an accessory articulation between the right clavicle and first rib, and an accessory sacroiliac articulation on the right side.

Burials 10, 11, 12, 31, 32, 33 (*USNM 380898*).—These burials were found in a group under the floor of a structure that had been destroyed by fire at least once. Most of the bones were fragmentary, and many were charred; calcined skull fragments were also present. Individual skeletons could not be sorted out in the laboratory, and only a miscellaneous selection of bones, probably representing most of the individuals, was kept. There seem to have been at least seven skulls, but postcranial parts included infants, small children, adolescents, and adults.

Burial 13.—Adult male; semiflexed burial in poor condition. The knees had been destroyed and the head displaced by a later house floor. Discarded in the field.

Burials 14, 18, 20.—A multiple burial, consisting of broken and partly charred bones, found in an old midden pit. There were three skulls, and the postcranial bones seemed to come from more than one skeleton. Discarded in the field.

Burial 15 (USNM 380899).—Adult male, represented by only the lower legs and feet. The remainder of the skeleton may have been destroyed by the pit which disturbed these parts.

Burial 16 (USNM 380900).—Female, about 35 years old; a fairly complete semiflexed burial (pl. 84). Many teeth lost postmortem; those remaining show fourth degree wear and only one cavity. The adjacent articular surfaces of the 2d and 3d cervical vertebrae are eburnated and lipped. The bodies of the lumbar vertebrae show considerable lipping of their anterior margins; and their cranial and caudal surfaces show irregularities suggestive of disk injuries. The marked indentation of the cranial surface of the sacral base, with extensive lipping at the anterior lumbo-sacral margins, suggests that the intervertebral disk had become displaced. (Observations on the thoracic vertebrae are not possible due to the weathering of the surfaces.) Otherwise, arthritic changes in the skeleton are limited to erosion of the medial joint surface of the left patella. The pelvis shows an accessory sacroiliac articulation on the right; and pits, indicative of pelvic traumata, on the ventral surface of the left pubis.

Burial 17 (USNM 380901).—Female, 20–23 years old. This skeleton was found as a bundle burial, close beside burial 16, in the same pit. In keeping with the youth of the individual, wear of the teeth is only grade 2; there are no scars on the ventral surface of the pubes. The right lamina of the fifth lumbar vertebra shows an old fracture with nonunion. There are septal apertures in both humeri.

Burial 18—see Burial 14.

Burial 19 (USNM 380902).—Male, 30–35 years old; a nearly complete semiflexed skeleton resting on its belly, face downward. Wear of teeth is slight (second degree), and there are no cavities. This is the only dentition at this site showing congenital absence of all four third molars. An old healed fracture of the left ankle had left the lower end of the tibia, the talus, calcanous and adjacent foot bones deformed.

Burial 20—see Burial 14.

Burial 21 (USNM 380903).—Female, over 35 years old; a flexed burial in poor condition. The bone is light and demineralized; the round, low skull is badly damaged and only two of the long bones are complete. The teeth are in extremely bad condition. Fourth-degree wear is accompanied by extensive exposure of the pulp chambers, periapical infections, formation of fistulae, and loss of 10 of the 12 molar teeth. Alterations in the occlusal plane probably caused the arthritic erosion in the left temporomandibular joint. Arthritic changes appear in the shoulder, thumb, spine, and knee, affecting almost all of the articular surfaces preserved. The bodies of all of the lumbar vertebrae show various degrees of collapse; and the anterior margins of the lower thoracic and lumbar vertebrae are lipped.

Burial 22 (*USNM 380904*).—The skull and skeleton of a newborn or very young infant.

Burial 23 (*USNM 380905*).—The skull and incomplete skeleton of a newborn or very young infant; the long bones are about the same length as those of burial 22, but more slender.

Burial 24 (*USNM 380906*).—Male, 28–35 years old; the semiflexed skeleton of a large, rugged individual, in good condition. The skull is slightly flattened at lambda (pl. 98). Despite the relatively slight wear of the teeth (second degree), the lower molars had been lost, and the remaining premolars and molars show interproximal caries and periapical osteitis. The canine fossae of the face are unusually large and deep. Two anomalies were noted, namely, the bifid left mandibular condyle, and spina bifida of the first neural arch of the six-segment sacrum.

Burial 25.—Flexed skeleton of an adult female (?), the head and upper trunk of which had been destroyed by a later midden pit. Discarded in the field.

Burial 26? (*USNM 380907*).—Male, 40–45 years old; parts of badly weathered skull and mandible only. The skull is long and high. The left upper canine projects upward into the canine fossa; the temporomandibular joints are arthritic. Tooth wear is third degree, with extensive resorption of the alveolar margins.

Burial 27 (*USNM 380908*).—Male, adult. A later refuse pit had destroyed the upper part of this extended burial, leaving only the forearms, legs, and feet. Vascular indentations on the unusually smooth posterior surfaces of both tibiae suggest old healed inflammation.

Burial 28 (*USNM 380909*).—Female, 30–35 years old. A midden pit had destroyed most of this skeleton, leaving only a badly crushed skull and fragments of the upper trunk. The skull appears to be long. Third- to fourth-degree tooth wear has been accompanied by chronic periapical infections, formation of fistulae, and loosening and loss of teeth.

Burial 29 (*USNM 380910*).—Male, 40–45 years old; the skull, jaw and a few bones of a skeleton lying under and mixed with burial 30. The teeth show third-degree wear, with the usual changes in the supporting bones.

Burial 30.—Adult male(?); semiflexed skeleton, knees and lower left (?) arm missing—disturbed by later digging; overlying burial 29. Discarded in the field.

Burial 31 (?).—Adult male; postcranial skeletal parts including fragments of right humerus, radii, left tibia and fibula; from bundle burial group (see burial 10); discarded in laboratory.

Burial 32 (?).—Adult female; skull fragments, fragments of humerus, fibulae, feet; sorted out in laboratory from bundle burial group (see burial 10); discarded.

Burial 33 (?).—Child 6–8 years old; parts of skull and skeleton, sorted out in laboratory from bundle burial group (see burial 10). Discarded.

Burial 34.—Adult male; the skull badly broken, and the rest of the bones of this flexed burial are in poor condition; discarded in the field.

Burial 35 (*USNM 380911*).—Male, over 26 years old; a midden pit had destroyed the skull and damaged the mandible of this semiflexed burial. The bones are in fair condition.

Burial 36 (*USNM 380912*).—Child about 10 years old; a reburial in a single pit, with an adult and infant (burials 37, 38; see pl. 85). The skull is long; and the teeth show no decay.

Burial 37 (*USNM 380913*).—Male, 35–40 years old; reburial of a nearly complete skeleton, lacking only hands, feet, and a few ribs and vertebrae. The teeth show second-degree wear, with neither loss nor cavities. There is slight lipping of the anterior margins of three lower thoracic and two upper lumbar vertebrae. Septal apertures are present in both humeri.

Burial 38 (*USNM 380914*).—The skull and skeleton of a newborn or very young infant; found under burials 36 and 37.

Burial 39 (*USNM 380915*).—Male, 32–37 years old; a nearly complete semiflexed burial (pl. 86). The teeth show second-degree wear, with no caries. Arthritic changes are limited to eburnation of the distal end of the left radius, and lipping of the anterior margins of the second and third lumbar vertebrae. The bowing and thickening of the right tibia (left tibia not preserved) may be of pathological origin. Although some of the bones are blackened, there is no evidence of burning.

Burial 40 (*USNM 380916*).—Female, 22–26 years old; the burial disturbed by vandals. Only a badly weathered skull could be saved. The suborbital fossae are shallow, giving the face a very flat appearance. Second-degree wear of teeth is not accompanied by caries. This individual may have belonged to an earlier population.

Burial 41 (*USNM 380917*).—Male, 50–60 years old; a bundle burial, with an infant (burial 42), under a house floor, possibly referable to an earlier population. The only parts saved were an incomplete skull, mandible, part of a left humerus and a pair of femora. On the inner surface of the left parietal, the vascular impression of one of the branches of the middle meningeal artery is enlarged and terminates near the sagittal suture near obelion in an irregular foramen about 10 mm. wide and 15 mm. long. The margins of this foramen resemble those found when the skull vault is perforated by metastases of cancer. The mandibular molars were lost long before death; the remaining teeth show second- or third-degree wear. The left temporomandibular joint shows arthritic erosion. The humeral shaft is slender and bent, suggesting a healed fracture. On both femora, the origin of the medial head of the gastrocnemius is roughened.

Burial 42 (*USNM 380918*).—Infant, from 6–12 months old; a nearly complete skeleton with burial 41. Although femur length suggests that this was a newborn or very young infant, the lower central incisors, judging from the alveoli and the shape and color of one tooth, had just begun to erupt. A fissure in the right side of the basioccipital bone results in an incomplete separation of the superior portion of the bone from the body. This anomaly is said to occur in about 0.1 percent of crania (Le Double, 1903, pp. 80–81).

Burial 43 (*USNM 380919*).—Male, 35–45 years old; a nearly complete extended skeleton, in good condition. The face and the left half of the mandible are missing; the teeth in the remaining part of the mandible show third-degree wear, but only slight alveolar resorption. The spine shows extensive arthritic changes: on the articular facets of the second, third and fourth cervical vertebrae; on the cranial and caudal surfaces of the fourth to seventh cervical vertebrae with slight lipping on the anterior margins of several of the lower thoracic vertebrae. There are indications of beginning arthritic changes at the knees, affecting the femoral condyles, the patellae, and tibiae. The fifth lumbar vertebra has fused with the sacrum, shortening the lumbar spine and elongating the sacrum.

CLARKSVILLE (Mc14) BURIALS

Burial 1 (*USNM 380842*).—Adult, sex unknown; parts of a skull and jaw, the only parts of a poorly preserved flexed burial retained. Although the teeth show only first-degree wear, most of the teeth present show advanced caries. Some of the molars had been lost, probably as the result of decay.

Burial 2.—Adult male; poorly preserved, semiflexed skeleton; postcranial skeletal parts discarded in the field; skull discarded in the laboratory.

Burial 3 (*USNM 380843*).—Female (?), over 26; a semiflexed skeleton in poor condition. Two of the lower ribs show traces of an old healed fracture. The olecranon fossae are perforated.

Burial 4 (*USNM 380844*).—Male, 45–55 years old; a nearly complete semiflexed skeleton, found in the same pit with Burial 5. Despite the advanced age of this individual, the teeth show only slight wear (first- to second-degree); nevertheless, seven of the molars have been lost, and most of the remaining teeth show caries. Arthritis is confined to the spine, affecting the articular facets of the second and third cervical vertebrae, the cranial and caudal surfaces of the lower neck vertebrae (fourth cervical to first thoracic); the costovertebral articulations of the eleventh thoracic; and the anterior margins of the third and fourth lumbar vertebrae. There is a small healed lesion near the middle of the right coronal suture, and an old fracture of one of the metacarpal bones which left the thumb deformed when it healed. The origin of the medial head of the gastrocnemius muscle, on both femora, is enlarged and roughened. Near the ankles, the portions of the tibiae and fibulae covered by the interosseous membrane are roughened. In the pelvis, there are accessory sacroiliac articulations on both right and left, and traces of beginning sacroiliac ankylosis on the right. The angle of the acromion process of the left scapula shows a small foramen.

Burial 5 (*USNM 380845*).—Child, about 8 years old; a well preserved semiflexed skeleton with burial 4. The skull is long; the deciduous molars are only slightly worn, but one is carious. The scapular spines are unusually rough, suggesting inflammatory changes. The articulation of the right ischial and pubic rami is enlarged and the unfused surfaces appear abnormal; fusion seems to have taken place on the left. The seventh cervical vertebra bears a rib on the left; and both the anterior and the posterior arches of the atlas have failed to unite in the midline.

Burial 6, *feature 15* (*USNM 380846*).—Male, 25–30 years old; a semiflexed skeleton, complete except for the hands (pl. 99). As one would expect with such a young person, tooth wear is only first to second degree; nevertheless several of the teeth are carious, and 0.5 cm. of the roots are exposed—more than three times the normal root exposure for this degree of wear. Aside from this suggestion of dental pathology, the skeleton appears normal.

Burial 6, *feature 25* (*USNM 380847*).—Male, over 45 years old; a few postcranial parts only. The tibiae are unusually flattened transversely.

Burial 7.—Female, young; a poorly preserved semiflexed skeleton; discarded in the laboratory.

Burial 8 (*USNM 380848*).—Female, 17–18 years old; a complete extended skeleton. The skull is warped, but appears to have been long and narrow. The teeth show little wear, but fully half of them are carious. The lower 6-year molars, and all of the 12-year molars are badly decayed, with total crown destruction. No teeth had been lost, but it is not likely that teeth in such poor condition would be retained for long. Greenish stains suggest the presence of copper ornaments near the right and left ears, on the back (stains on the left scapula, ribs and spines of the neck vertebrae) and on the left forearm. The copper necklace found with this skeleton is shown by Miller in his figure 40.

Burial 9 (*USNM 380849*).—Female (?), 22–27 years old; a semiflexed burial in poor condition, in the same pit with burial 10. Wear of the teeth is slight (first degree), and although the remaining teeth apparently are not carious, at least four of the molars have been lost, with complete alveolar resorption. The parts of humerus, radius, ulna, femora, tibia, and fibula present show localized areas of osteitis and periostitis, where the cortex of the shafts is thick, porous, and light weight.

Burial 10.—Parts of adult skull and skeleton in poor condition; discarded in the laboratory.

Burial 11.—Infant, extended on back; discarded in the field.

Burial 12.—Child, semiflexed skeleton; discarded in the field.

Burial 13.—Child, semiflexed skeleton; discarded in the field.

Burial 14 (*USNM 380850*).—Male about 25 years old; a semiflexed burial in good condition. Cuts on the frontal and left parietal bones suggest scalping (pl. 103). The teeth are but slightly worn (first degree), but at least three are carious and one has been lost. Deformity of the left iliac blade suggests an old fracture in which extensive inflammatory change preceded healing. The iliac blade is thick and ankylosed with the sacrum; and there is a large fistula opening into the acetabulum. Aside from this old injury and the apertures in the humeral septa, the skeleton is normal.

Burial 15.—Adolescent; skeleton in extremely poor condition; disintegrating when found.

Burial 16 (*USNM 380851*).—Child about 3 years old; a nearly complete flexed skeleton.

Burial 17 (*USNM 380852*).—Child, 8–10 years old; a flexed skeleton lying on its right side, in fairly good condition. The left half of the skull is missing. Although this damage may have been caused by plowing or other disturbance of the overlying soil, the pattern of breakage and various knife marks inside the vault and jaw suggest that the damage occurred at the time of the burial or just before.

Burial 18 (*USNM 380853*).—The skeleton of a newborn or very young infant; extended; in fair condition.

Burial 19.—Child, probably less than 3 years old; extended on back; discarded in the field.

Burial 20 (*USNM 380854*).—Male, 28–35 years old; a flexed skeleton, in fair condition, lacking the hands. Second-degree tooth wear had been accompanied by the loss of at least two lower teeth and the decay of nine of the upper teeth. The upper third molars are unusually small.

Burial 21 (*USNM 380855*).—Male, 30–38 years old; a well-preserved semiflexed skeleton. Second-degree tooth wear was accompanied by advanced caries in seven of the upper teeth; none of the teeth had been lost, but the molars and incisors are in such bad condition that their loss would have been only a matter of time. Arthritis is limited to the anterior margins of the second, third, and fourth lumbar vertebrae. The spine shows a tendency toward elongation: the first lumbar vertebra bears a rib on the left, and the sacrum consists of 6 segments. The pelvis has small accessory sacroiliac articulations bilaterally. The only other features of note are the unusually narrow and high mandibular coronal processes.

Burial 22 (*USNM 380856*).—Female, 20–24 years old; a nearly complete semiflexed burial. First-degree wear of teeth, with considerable tartar formation, had been accompanied by caries in three of the lower teeth, one of them abscessing, and loss of a lower first molar. Depressed and eroded areas on the anterior surface of the femora, just above the lateral condyles, may have resulted from pressure of the patella during repeated extreme flexion of the knees. A wrist injury left the lower end of the left ulna shortened and articulating with the radius just above the normal articular facet; healing had been preceded by infection and formation of a fistula. The axis lacks a foramen for the vertebral artery on the right, and the corresponding foramina on the atlas and fourth cervical vertebrae are reduced in size; the other cervical vertebrae are either missing or damaged. The base of the skull is damaged, so that the basilar portion of the arterial groove could not be examined. The fourth (or fifth?) lumbar vertebra has a separate neural arch. Cuts on the left parietal bone and around lambda suggest an attempt at scalping.

Burial 23 (*USNM 380857*).—Infant about 18 months old; an extended burial.

Burial 24 (*USNM 380858*).—Male, 45–55 years old; a flexed burial in poor condition. The skull is long and narrow, with many wormian bones in the right lambdoid suture. Wear of the teeth is second to third degree, with extensive decay. Twelve of the teeth were lost during life, and ten of the remaining teeth have cavities. Arthritic changes had taken place in the shoulder and elbow joints, and in one of the articular facets of the cervical vertebrae. It is likely that arthritis was present in other parts of the spine, but the vertebrae are too damaged to permit examination. The sternal end of one of the right ribs (the seventh?) is forked.

Burial 25 (*USNM 380859*).—Male, 21–25 years old; a bundle burial, with a child (burial 26), an infant, and an adult (burial 27). The width and roundness of the crushed skull suggest deformity. The jaws are incomplete, but wear of teeth in the parts present is first degree; and none of the teeth appear to have been carious or lost.

Burial 26 (*USNM 380860*).—Child, 7–9 years old. The skull is round and rather low, but shows no deformity. Six of the teeth, including the four 6-year molars, are carious, and the abscess at the roots of the left lower second deciduous molar seems to have affected the unerupted permanent premolar below it. The roof of one orbit is thickened and porous, and the ulnae, fibulae, and tibiae are thickened and bowed. Parts of another child about this age are present, so there are two atlases with this skeleton. The anterior arch of one of these has failed to fuse in the midline.

Burial 27.—Adult, sex unknown; skeletal parts, including parts of humeri, femora, tibiae, and two lumbar vertebrae. The tibiae were thickened and bowed anteroposteriorly. Discarded in the laboratory.

Burial 28.—Child, 2–4 years old; an extended burial; discarded in the laboratory.

Burial 29 (*USNM 380861*).—Female, 25–30 years old; a semiflexed burial, in fair condition, which may have come from an earlier population. Although the skull lay face upward when found, the posterior part of the vault is missing. Tooth wear is first to second degree, in the parts of the maxillae preserved. Five teeth had been lost, and caries in four of the remaining teeth had reduced the crowns to shells, resulting in at least one atrial abscess. Vascular markings on the inner surface of two right ribs suggest old inflammatory changes. Both iliac blades show facets for accessory sacroiliac articulations.

Burial 30 (*USNM 380862*).—Child about 12 years old; a badly damaged semiflexed skeleton, which may have come from an earlier population. All of the 6-year molars are decayed. Retention of the roots of both upper second deciduous molars resulted in malposition of the upper second premolars. The frontal bosses are thickened, and there are signs of healed osteoporosis in the orbits. The long bones are normal.

Burial 31.—Infant or young child; a flexed skeleton in poor condition; discarded in the laboratory.

Burial 32 (*USNM 380863*).—Female, 25–30 years old; a semiflexed skeleton. Tooth wear is hard to evaluate, for the early loss of the molars concentrated wear on the incisors; the latter show third- to fourth-degree wear. Six of the teeth, mostly molars, had been lost, and at least seven of the remaining teeth are carious. The tibiae and fibulae are thickened and bowed; the surfaces are porous and irregular, but smooth, except for vascular indentations. Similar changes, although of lesser degree, are seen in the femora, clavicles, and left humerus. In addition, possibly associated with these inflammatory changes, are deep vascular grooves on the caudal surfaces of two lower thoracic vertebrae. The rather light weight of the affected bones makes a diagnosis of syphilis unlikely. The left sacroiliac joint surfaces are porous and lipped.

Burial 33 (*USNM 380864*).—Female(?), 26–32 years old; the crushed and warped skull of this flexed skeleton seems to have been long and narrow. The lower leg bones were broken when the bones were found. Tooth wear is second degree, but only two of the teeth are decayed and one had been lost. The anterior occlusion is somewhat unusual. The lower incisors are worn in a flat plane, but a gap of nearly 5 millimeters separates the upper incisors from the lower (pl. 102, *upper*). It is more likely that this represented an intentional alteration, such as that produced by filing, than habits of chewing or of carrying something, such as a pipe, in the mouth. The size and shape of the gap are similar to that in an Adena skull from the Ayers Mound, Owen County, Ky., where the upper incisors had been removed in order to permit the wearing of a cut wolf palate (cf. Webb and Baby, 1957, pp. 64–65). The other bones are too poorly preserved to permit further observations.

Burial 34.—Male, 35–45 years old; the incomplete skull and bones of a flexed skeleton; discarded in the laboratory.

Burial 35 (*USNM 380865*).—Male, 38–45 years old; the badly damaged skull and jaw are the only parts of a flexed burial retained. The teeth show second-degree wear; at least eight of the upper and three of the lower teeth are carious, and four of the lower teeth had been lost during life. Cuts on the frontal bone (pl. 102, *lower*) suggest that this individual had been scalped.

Burial 36 (*USNM 380866*).—Male, 45–55 years old; the skull of this flexed burial seems to have been long and narrow. Most of the teeth in both upper and lower jaws were lost during life, and two of the three teeth remaining in the mandible are carious. Wear is second to third degree. Arthritic changes had affected the left shoulder, elbow and wrist joints, and the acetabula. The articular facets and bodies of the second to fifth cervical vertebrae, and the bodies of the fourth and fifth lumbar and first sacral vertebrae are lipped.

Burial 36A.—Adult male; a flexed skeleton in poor condition; discarded in the laboratory.

Burial 37.—Adult, male; a flexed skeleton with skull and vertebrae missing; possibly disturbed by a later well. Discarded in laboratory.

Burial 38 (*USNM 380867*).—Female, 25–30 years old; the skull of this poorly preserved flexed skeleton seems to have been round. Tooth wear is second degree; at least nine teeth are carious, and three of the lower molars had been lost. The left ilium bears a facet for an accessory sacroiliac articulation.

Burial 39 (*USNM 380868*).—Female, about 25 years old; an extended skeleton showing extensive postmortem damage (see p. 382). Tooth wear is slight (first degree), but decay is advanced, with nine teeth carious and two already lost before death. Accessory sacroiliac articulations are found bilaterally.

Burial 40.—The flexed skeleton of an adult male, found in a pit with the extended skeleton of a newborn or very young infant (burial 41). Both discarded in the laboratory.

Burial 42 (*USNM 380869*).—Male, 35–45 years old; an extended skeleton, possibly from an earlier population. Tooth wear is slight (first degree), but all four first molars had been lost, and seven of the remaining teeth are carious. The right upper second premolar had rotated in its alveolus, possibly associated with the loss of the adjacent molar. The patellae and distal femoral condyles show an unusual pattern of articulation. The articular surface of the patella is about 4.5 cm. wide and 2 cm. in length—about two-thirds the usual length; and the articulating surface of the anterior femoral condyles is unusually narrow.

Burial 43.—The extended skeleton of a newborn or very young infant; discarded in the field.

Burial 44 (*USNM 380870*).—Female, 19–20 years old; a semiflexed burial in good condition. Although tooth wear is second degree, and there are tartar deposits on the teeth, there is no caries, and all of the teeth are present. The shafts of both fibulae, both radii, the left ulna, and the left clavicle show slight swellings a little below midshaft. In the radiographs, these swellings appear as areas of lesser density originating on the surface of the bone, and to have been approaching the medullary cavity. Two large holes in the vault may be of pathological origin. A septal aperture appears on the left humerus.

Burial 45 (*USNM 380871*).—Male, over 35 years old; the skull of this semiflexed skeleton was crushed when found, and could not be saved. The bodies of the fifth and sixth cervical vertebrae, the upper margin of the fourth lumbar vertebra, and the heads of several ribs show arthritic changes. The neural arch of the fifth lumbar vertebra is separate. The six-segment sacrum has become ankylosed with the left ilium.

Burial 46.—Adolescent 12–14 years old; a semiflexed skeleton in poor condition; discarded in the laboratory.

Burial 47.—Child, represented by the skull and a single long bone; discarded in the field.

Burial 48 (*USNM 380872*).—Male, 25–30 years old; the skull of this semiflexed skeleton shows lambdoid deformity; the bones are in poor condition. Part of the palate is missing; the remaining teeth show second-degree wear, with six teeth carious, and at least three lost. The left tibia has a swelling on the medial surface, near the proximal end. This area of lesser density appears, in the radiograph, to extend inward toward the medullary cavity. The surface is smooth but porous, and there are a few vascular indentations leading from the swollen area onto the surrounding surface.

Burial 49 (*USNM 380873*).—Adolescent, 15–18 years old; a semiflexed skeleton. Three of the teeth are carious, but none had been lost during life. Pathological lesions occur in the frontal region of the skull, and swellings on both surfaces of the mandible just below the right second molar. Swellings also occur in the shafts of the right clavicle, right humerus, left radius, right ulna, left femur, both tibiae, and both fibulae. Again, most of these appear as areas of reduced density, of subperiosteal origin, spreading over the surface of the bone, and invading the cortex. The leg bones are bowed.

Burial 50.—Infant or very young child; discarded in the field.

Burial 51 (*USNM 380874*).—Female, 20–24 years old; a semiflexed skeleton buried in the top of a large midden pit. Tooth wear is slight (first degree), but four of the lower molars and at least two of the upper teeth had been lost during life. Two of the remaining teeth are carious. Both tibiae are swollen and bowed anteriorly. Their medial and anterior cortex appears thickened but of decreased density; the surface is porous but smooth.

Burial 52 (*USNM 380875*).—Male, 45–55 years old; this fragmentary semiflexed skeleton had been buried in the top of a midden pit. The teeth show first- to second-degree wear; six are carious and at least three had been lost before death.

Burial 53 (*USNM 380876*).—Female, 20–24 years old; extended on the back, with the lower legs flexed. First-degree tooth wear is accompanied by the loss of all 6 lower molars and 2 of the upper teeth, and caries in at least 11 of the remaining teeth. Inflammatory changes appear on both clavicles, at the right elbow (affecting humerus, radius, and ulna), on the posterior surface of the left femur, and at the midshaft of the right tibia. The cortex of the latter is thickened, but of reduced density.

Burial 54 (*USNM 370877*).—Male, 17–19 years old. The skull of this semiflexed skeleton shows slight occipital deformation. First-degree tooth wear is accompanied by caries in five of the lower teeth, but no teeth had been lost. Both tibiae are bowed anteriorly, and there are areas of inflammatory change near the heads and at the midshafts. The cortex is thickened, but of decreased density. In contrast to the normal right humerus, the left has a septal aperture 11 mm. wide and 17 mm. long. The first sacral neural arch is open.

Burial 55 (*USNM 380878*).—Female, 24–26 years old; the skull of this semiflexed skeleton is quite round. First-degree tooth wear is accompanied by extensive decay and the loss of at least one tooth. The lower third molars are unerupted or absent. There is a slightly raised area on the anterior surface of the left tibia, just above midshaft. It is difficult to determine whether an indentation in the center of this area is of postmortem origin or associated with the lesion. There is a small supracondylar process on the right humerus. The neural arch of the fifth lumbar vertebra is separate.

Burial 56 (*USNM 380879*).—Adolescent, about 15 years old; an extended burial, accompanied by beads, in poor condition. Although the third molars are just erupting, there is already caries in three of the lower teeth. The sagittal suture is closed internally, the basilar suture also appears to be closed; and the very long, narrow skull may be scaphocephalic. The frontal and anterior parts of the parietal bones are somewhat thicker than normal; and all of the long bones, with the possible exception of the humeri and femora, show inflammatory changes. The thickened, porous bone is light in weight.

Burial 57.—Male, over 35 years old; flexed burial in poor condition; discarded in the laboratory.

Burial 58.—Male, 22–26 years old; the skull of this flexed skeleton was crushed when found, and many parts of the skeleton were missing; discarded in laboratory.

Burial 59.—Adult; flexed skeleton; skull crushed and many parts missing; discarded in the field.

Burial 60.—Adolescent; most of the trunk of this flexed skeleton missing; discarded in the field.

Burial 61.—The extended skeleton of a newborn or young infant; discarded in the field.

Burial 62.—Adolescent; most parts of this flexed burial missing; discarded in the laboratory.

Burial 63.—Adult; only the poorly preserved legs of a flexed burial; discarded in the field.

Burial 64 (*USNM 380880*).—Male, 20–22 years old; the skull of this semiflexed skeleton shows slight occipital deformity and asymmetry. Tooth wear is first to second degree, with considerable caries; no teeth have been lost. Possibly associated with the caries are the unusually large mental foramina.

Burial 65 (*USNM 380881*).—Child, about 8 years old; extended burial. The skull is round, and the bone unusually thin. Five of the teeth are carious, and there are large abscesses at the roots of the first and second lower deciduous molars.

Burial 66 (*USNM 380882*).—Female, 20–30 years old; the skull of this semiflexed skeleton is badly warped but long; and the bones are in poor condition. Tooth wear is first degree, with extensive caries (at least 10 teeth affected); and at least 3 lost. The shaft surfaces of the tibiae, fibulae, and right ulna show slight inflammatory changes; other bones may have been affected, but weathering and other damage make further observations impossible. Radiologically, the tibial cortex appears thickened but of low density.

Burial 67.—Infant; extended; discarded in the field.

Burial 68.—Child; discarded in the laboratory.

Burial 69 (*USNM 380883*).—Male, 40–50 years old; the skull of this semiflexed burial is rather long, and the bone quite thin and in poor condition. In accordance with the age of this individual, tooth wear is second degree, at least 10 teeth are carious, and at least 2 have been lost. Large suppurating lesions, attributable possibly to osteomyelitis, are found on all of the long bones; the palate is thickened around its margins; and the great toe bones of one foot are fused (pl. 101).

Burial 70 (*USNM 380884*).—Male, 16–17 years old; none of the bones of this flexed (?) skeleton are intact; the only observation possible is that the bones are unusually light in weight.

Burial 71 (*USNM 380885*).—Female (?), 16 to 18 years old; the skull of this semiflexed skeleton is badly warped, but apparently long. Tooth wear is first degree; the teeth present showed neither caries nor loss. Both humeri had large septal apertures.

Burial 72.—Female, adult; a semiflexed skeleton in poor condition; discarded in the laboratory.

Burial 73 (*USNM 380886*).—Male, at least 35 years old. A projectile point was embedded in the right humerus of this semiflexed skeleton, and a clay pipe was found nearby. At least six of the mandibular teeth had been lost during life; the three remaining are undecayed, but show second-degree wear. The left temporomandibular joint and the talocalcanear joints of both ankles are arthritic; the spine is too damaged to allow observation. Both tibiae are thickened and bowed and the fibulae show extensive inflammatory changes.

Burial 74.—Child, 4–6 years old. The bones of this semiflexed skeleton were soft and crumbly when found, and the skull had been crushed; only the teeth could be saved, and these were discarded in the laboratory after examination.

Burial 75 (*USNM 380887*).—Male, 25–35 years old; a partial skeleton which seems to have been extended, with the lower legs flexed. The long, undeformed skull is too warped for restoration. The teeth show third- to fourth-degree wear, with extensive decay and loss before death. The right temporomandibular joint is arthritic; and the right orbital roof, right clavicle, femora, tibiae, and fibulae are thickened and porous. The long bones, which are light in weight, are bowed anteroposteriorly.

Burial 76 (*USNM 380888*).—Male, adult; an extended burial in very poor condition. The skull, which shows slight lambdoid deformity is rather short, narrow, and high. Tooth wear is second degree, with at least six of the teeth carious; the maxillae are in too poor condition to estimate the number of teeth lost during life. The postcranial parts were discarded after examination in the laboratory.

Burial 77 (*USNM 380889*).—Male (?), adult; a semiflexed skeleton in poor condition. The long narrow skull is too badly damaged for measurement. The one tooth present is carious, and the fragment of mandible gives evidence of the loss of a number of teeth during life. The postcranial parts were discarded after examination in the laboratory.

Burial 78.—Only a few shell beads remained to represent this badly disintegrated burial. The size of the pit suggested a flexed adult skeleton. None of the bones could be preserved.

COMPARISON OF THE TOLLIFERO AND CLARKSVILLE POPULATIONS

The time interval that separates the Tollifero and Clarksville populations suggests that physical differences will be found between the two peoples, analogous to the cultural differences seen by the archeologist. Such physical differences may be basically genotypic—due to genetic alterations brought about by natural selection, genetic drift, admixture with neighboring groups, or population replacement; or they may be primarily nongenic—brought about by external factors. The relatively short time lapse separating the two populations argues against major genetic drift unless migration can be invoked. And, when one considers that the potential immigrants are not likely to have been too different from the people they replaced, this explanation is not too impressive. On the other hand, an external agency of considerable importance, the introduction of agriculture, can be demonstrated. In weighing the relative effect on physique of possible genetic change against known environmental change, the interaction of the two agents of change cannot be ignored. It is a matter, then, not of excluding one or the other, but of deciding which played the major role.

Since it is easier to evaluate the possible physical changes produced by known factors than those produced by unknown, it is convenient to start with the working hypothesis that, in this case, diet, accompanying the introduction of agriculture, was the major source of physical change. The changes in diet attributable to the adoption of agriculture are not hard to estimate. For example, clearing small plots for raising corn and beans would not greatly affect the number of mammals, birds, fish, and shellfish available for food, but would materially increase the carbohydrate content of the diet. In contrast to the more generous diet of the Clarksville people, the gathering of nuts, seeds, and roots probably provided the Tollifero people with a minimal supply of carbohydrates at best; and the remainder of their caloric requirements would have had to come from animal protein. Although such a diet was obviously adequate for subsistence and survival, it would not necessarily have provided an extra margin for optimal growth. And there may well have been seasonal shortages.

Before seeking genetic explanations for physical differences between the Tollifero and Clarksville populations, it is desirable to explore the possibility that the improved diet available to the latter is a major cause of change. To do this, it will be necessary first to demonstrate that there was indeed a significant difference in the food of the two peoples. Once this has been established we will be in a position to ask whether the metric differences in the skulls and postcranial bones can be attributed to the dietary difference or whether some other explanation need be sought. Diet is also a convenient indicator of the economic well-being of a population; and prosperity may well have had an effect on the incidence of disease, the length of life, and severity of age changes.

Customs other than those related to diet also change, and may leave their mark on the skeletons. As mentioned in the individual descriptions, there is evidence for cultural differences in scalping, burial practices, cranial deformity, and the like. A consideration of these may add to the picture details not directly available to the archeologist.

DENTITION AND DIET

The pattern of tooth wear[5] and dental pathology seen in the Tollifero crania differs considerably from that seen in the Clarksville crania (tables 1 and 2). At the Tollifero site, a preagricultural or early agricultural site, the coarse diet produced rapid wear of teeth. By 35 years of age, most of the individuals showed at least second-degree attrition, and third-degree wear was usual by 45 years of age. Decay and loss are relatively rare, and relatively few teeth in each dentition are affected. In this pattern of wear, as the crowns of the teeth are worn down, the distance from the enamel margin to the alveolar crest gradually increases. This is, in effect, a continued physiological eruption of the teeth, partially compensating for the shortening of the teeth. When third- or fourth-degree wear is attained, attrition takes place more rapidly than secondary dentine can be formed, the unprotected pulp becomes infected and periapical lesions form, often with draining fistulae, followed by destruction of the alveoli and loss of the teeth. As periapical infection proceeds, cavities appear in the crowns of the teeth, and eventually the affected teeth are lost. Spaces appear between the teeth as the crowns are worn down so that contact between adjacent teeth is lost, or after slight migrations of teeth in the arch. When food becomes impacted in these spaces interproximal caries follows. Tartar formation is usually slight, and causes little alveolar resorption.

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[5] Wear of teeth has been graded as follows: 1, exposure of the dentine of the cusps; 2, obliteration of the cusps, leaving islands of enamel at the bottom of the grooves; 3, shortening of the crown to near its neck; 4, exposure of the pulp and beyond (cf. Leigh, 1934, pp. 23 ff.)

Damage to the face often made it difficult to describe the condition of the dentition adequately. Complete or partial healing of the alveolus was taken as evidence of the loss of a tooth during life; absence of signs of alveolar resorption as evidence of loss of the tooth after death. When teeth were lost postmortem, caries could often be inferred from the presence of inflammatory changes in the alveolus. Because of the extensive postmortem damage and loss, it seemed wisest to record simply that caries was absent or present in the dentition, or that teeth had or had not been lost, although it would have been preferable to state the number of teeth affected.

TABLE 1.—*Age and wear of teeth in adults*

Age in years	Degree of wear			
	1	2	3	4
Tollifero Series (N=17):	*Percent*	*Percent*	*Percent*	*Percent*
21–35	--------	29.4	5.9	--------
35–45	--------	5.9	41.2	11.8
45+	--------	--------	5.9	--------
Clarksville Series (N=27):				
21–35	44.5	22.2	3.7	--------
35–45	3.7	7.4	--------	--------
45+	3.7	11.1	3.7	--------

TABLE 2.—*Wear, decay, and loss of teeth during life in children and adults*

	Degree of wear					Total	Percent
	0	1	2	3	4		
Tollifero Series:							
Number of dentitions	--------	[1] 1	6	9	2	18	--------
Dentitions with carious teeth	--------	0	1	3	2	6	33
Dentitions with teeth lost	--------	0	1	3	2	6	33
Clarksville Series:							
Number of dentitions	7	17	12	2	--------	38	--------
Dentitions with carious teeth	7	15	12	2	--------	36	95
Dentitions with teeth lost	2	12	12	2	--------	28	74

[1] One fractured upper second molar.

In contrast to the relatively healthy teeth of the Tollifero crania, the teeth of the Clarksville crania are in extremely poor condition. First- or second-degree wear is the rule, even in older people, with caries appearing in the crowns of both deciduous and permanent teeth, and resulting in extensive destruction and loss of teeth. The pattern is fairly consistent. First to decay and fall out are the lower first molars; then the upper first molars; then the lower second molars, and eventually the remaining teeth are affected. Only 2 of the 38 dentitions examined did not have at least one carious tooth; as a rule most of the posterior teeth were affected.[6]

The light wear and widespread caries are characteristic of a soft diet high in carbohydrates. The archeological material found at the Clarksville site included corn and beans as well as wild nuts and seeds, with mortars and manos for grinding grains. Nevertheless, the abrasion of the teeth, even in older persons, is less than might be expected if gritty cornmeal formed the basis for a major part of the vegetable diet. It probably did not, since historical evidence suggests a rather varied cuisine.

Since the Clarksville site is late in time, some idea of the diet and food preparation there may be derived from the writings of the earliest visitors to Virginia and the Carolinas. Among these are Arthur Barlowe, who discovered Virginia[7] in 1584; Thomas Hariot, who was sent by Raleigh to Virginia in 1585; and John White, who came to Virginia the same year with Raleigh's first colony, stayed with the settlers at Roanoke Island for a year, returning to England with Sir Francis Drake, and revisiting Virginia and Roanoke in 1587 (Lorant, 1946, pp. 121 ff.). These and other early visitors had considerable opportunity to see what the Indians ate, and how it was prepared, and included descriptions and sketches of these activities in their reports.

During his visit to the Carolina coast in 1584, Barlowe on one occasion was invited to dine with the wife of Granganimeo, the king's brother. The menu on that occasion consisted of—

> some wheate like furmentie, sodden Venison, and roasted, fish sodden, boyled, and roasted, Melons rawe, and sodden, rootes and divers kindes and divers fruites. [Barlowe, 1958, pp. 291–292.]

Earlier Granganimeo had presented them with deer, rabbits, fish, melons, walnuts, cucumbers, squash, peas, and corn (ibid., p. 290).

White, who visited the Virginia-Carolina coast the next year, mentions much the same vegetables; his sketches show a wooden frame for broiling fish, and a pot for "seething their meate."

By far the most extensive accounts of the food of the Virginia-Carolina Indians are given by Hariot (Lorant, 1946, pp. 252–256), in an account illustrated with engravings adapted by DeBry from White's watercolors. In the second part of his report, entitled "Concerning such commodities as Virginia is known to yield for food and the sustenance of life, customarily eaten by the natives . . ." he lists the following:

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[6] Similar patterns of wear versus decay have been reported from other areas. In describing a Hopewellian series from near Kansas City, Mo., Stewart (1943 b) notes heavy wear, but little caries, while in a Middle Mississippi series from the same area, wear is slight to medium, and caries is common. Stewart attributes this difference to a change in diet, calling attention to a similar change in the teeth of the Hopewellian and Middle Mississippi peoples in Ohio.

[7] That is, the Virginia-Carolina coast.

> *Maize* (called by the English Guinea wheat or Turkey wheat): The inhabitants not only use it for bread but also make food of these grains. They either parch them, boiling them whole until they break, or boil the flour with water into a pap.
>
> *Beans, peas:* The natives boil them in a broth, where the beans are reduced to small pieces, or boil them whole until they are soft and begin to break . . . These peas are either cooked by themselves or mixed with wheat. Sometimes after they have been boiled whole, they are pounded in a mortar and made into loaves or lumps of doughy bread.

Hariot also mentions melons, pumpkins, gourds, and sunflower(?) seeds, the latter made into a bread or broth. Various roots, among them cassava, are mentioned as being eaten raw, boiled, roasted, or made into puddings. Chestnuts were eaten raw, or crushed and boiled, or as bread. Walnuts were eaten raw, or ground in a mortar with water to make a milk, which they added as flavoring to their "spoon-meat," boiled wheat, peas, beans, and pumpkins. Five kinds of acorns were available; these were eaten raw, boiled, pounded into loaves, crushed for oil, parched, or dried and then soaked and boiled. Some of the latter were eaten with fish or meat as a substitute for bread. Among the fruits were grapes, strawberries, and other kinds of berries. For meat, they hunted a variety of animals: deer, rabbits, bears, turkeys, geese, and other birds. Fish were trapped in weirs or speared. The waters yielded crabs, oysters, and other shellfish, as well as tortoises which supplied both meat and eggs.

Later visitors to the Southeast also decribed the food of the Indians and its preparation.[8] Strachey noted that they gathered the corn while it was green and milky and roasted it; the canes were sucked for the sugar they contained. Smith described the preparation of hominy, both the large grains and grits; others mention cornmeal mush, bread, and other uses for the grain. Indeed, some 40 dishes using corn were prepared, and the uses of beans, squash, and other vegetables were nearly as varied.

While it is not likely that all of the above-named dishes were used by the people at the Clarksville site, it is safe to assume that the diet of the Indians in the Occaneechi Island area around A.D. 1500 was varied and well cooked, soft and fairly starchy. In this respect the historical record of the kind of food available and its preparation accords well with the archeological record, and the inferences drawn from the state of the teeth of these people.

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[8] For fuller descriptions, see Swanton, 1946, pp. 351–381.

Although it is relatively easy to infer the kinds of food available to the Clarksville people, questions regarding the adequacy of their diet are more difficult to answer. Just how abundant were these foods? One must remember that many of the early accounts, such as Hariot's, which give the impression of a land flowing with milk and honey, were written to induce colonists to settle in the New World. Their authors cannot be blamed for stressing the potential productivity of the land and neglecting to mention the work and planning needed to exploit it. There is no reason for concluding that the Indians, lacking European methods of food production and preservation, enjoyed the prosperity which the colonists were eventually to achieve. The explorers' reports are sobering. There are not infrequent references to expeditions which ran out of food and were unable to purchase supplies from the Indians because the Indians' reserves were nearly exhausted. Although the introduction of agriculture probably ameliorated the situation, it is unlikely that this eliminated the basic cycle of feast and famine. In times of abundance, there was enough for everyone; but in times of famine, the men or children may have received a larger share than the women. There is as little evidence on the nutritional adequacy of the diet.

Food and cookery at the Tollifero site were apparently quite different both in quality and quantity. Wild nuts, berries, and grass seeds were found by Miller (p. 253), and bones of various animals, including deer and bear; stone objects including mortars, boiling stones, and hoes, but no other indication of agriculture. Undoubtedly the diet and cuisine were not as limited as this scanty evidence would imply; nevertheless, a hunting and gathering economy would not supply as varied or abundant dietary as an agricultural economy; and the well-worn teeth confirm the suggestion of a diet containing far more coarse, fibrous foods, than soft, starchy mushes and puddings. It is noteworthy that the only fractured tooth seen in either series was in an adolescent from this site (USNM 380890).

PHYSICAL TYPE OF THE TOLLIFERO AND CLARKSVILLE POPULATIONS

The most salient physical difference between the populations at the Tollifero and Clarksville sites seems to be one of general body size. Cranial and facial size, as expressed in the modules, and long bone lengths, seem to be about 2 to 4 percent greater in the later population (table 3). It is necessary to examine the variations in proportions, however, to see whether this increase in size is uniform enough to be attributable to increase in caloric intake, or whether some other cause must be sought.

The cranial index in the two populations shows distinct differences (table 4). Except for two rather aberrant individuals (USNM 380892 in which the headform seems somewhat abnormal; and USNM 380906 which is quite large and round), the Tollifero crania are relatively narrow. If these two were excluded from the series, the mean cranial index would be about 74. On the other hand, the Clarksville crania are considerably wider and somewhat higher, with a mean cranial index of about 80. Since neither series is large enough to allow calculating standard deviations, "mean sigmas" such as Stewart's (1943 a) will have to serve as indicators of the variability. The mean cranial indices are well over one mean sigma apart, and therefore are probably significantly different. This difference is not likely to be due to undetected deformity in the later population, for the relatively greater width is also found in the face, orbits, nose, and palate. The very slight deformity seen occasionally is not likely to have caused these differences.

TABLE 3.—*Comparison of craniofacial modules and long bone lengths in Tollifero and Clarksville males*

	Tollifero site		Clarksville site		Tollifero vs. Clarksville (Tollifero=100 percent)
	Dimension	Relative to cranial module	Dimension	Relative to cranial module	
	Mm.	*Percent*	*Mm.*	*Percent*	*Percent*
Cranial module	152.6	------------	156.5	------------	102.6
Total facial module	126.25	82.9	130.4	83.3	103.3
Orbital module	38.63	25.3	39.55	25.3	102.4
Nasal module	37.16	24.3	39.75	25.4	107.0
Palatal module	55.80	36.6	62.4	39.8	111.8
Femur length (mean of R+L)	438.0	287.0	458.0	293.0	104.6
Humerus length (mean of R+L)	316.0	207.1	327.0	208.9	103.4

In table 3, the major difference between the two male series seems to lie in the somewhat greater size of the Clarksville males. Yet an examination of the individual measurements in tables 4 and 5 indicates that this difference is not simply one of enlargement but also of change in proportion. The major changes in the Clarksville face seem to lie in the breadths—the bizygomatic, nasal, orbital, and palatal. Of these, only the change in the bizygomatic breadth is likely to be statistically significant. Height increases in the face and its components seem to have been relatively slight, and there has been a decrease in the height of the lower jaw. Some correlation between the facial heights and breadths and the components they cover is to be expected (Pearson and Davin, 1924), but the correspondence in this case is not very close. Orbital breadth has increased more than height, resulting in relatively lower orbits, but total size, relative to the skull and face, is about the same. Nasal height has increased

TABLE 4.—*Measurements and indices of Tollifero and Clarksville crania* [1]

TOLLIFERO SITE

	Males											Females					
USNM No.	380891	380892	380902	380906	380907	380910	380913	380915	380917	380919	Mean	380897	380900	380901	380903	380916	Mean
Burial No.	2	3	19	24	26	29	37	39	41	43		9	16	17	21	40	
	Mm.	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*
Glabello-occipital length	188	(169)	182	183	-----	(185)	(175)	182	186	186	181.8	184	(188)	169	177	180	179.5
Maximum breadth	137	(139)	134	(158)	-----	125	135	135	128	142	137.0	131	(128)	127	139	(125)	130.0
Basion-bregma height	142	(143)	138	140	-----	-----	(135)	138	-----	(137)	139.0	-----	-----	132	-----	138	135.0
Auricular height	115	(126)	115	123	-----	119	(113)	118	115	(119)	118.1	118	(115)	(112)	(105)	114	112.8
Basion-porion height	18	(20)	23	21	-----	-----	(21)	22	-----	(17)	20.3	-----	-----	21	-----	26	23.5
Cranial module	155.7	(150.3)	151.3	160.3	-----	-----	(148.3)	151.7	-----	(155.0)	152.6	-----	-----	142.7	-----	147.5	145.6
Total facial height	(117)	-----	116	120	-----	-----	-----	116	-----	-----	117.3	-----	-----	106	-----	-----	-----
Upper facial height	69	-----	69	75	66	70	-----	67	-----	-----	69.3	-----	-----	65	-----	67	66.0
Bizygomatic breadth	131	133	135	146	-----	-----	-----	(129)	-----	-----	135.2	-----	(126)	-----	-----	(122)	124.0
Minimum frontal breadth	92	(91)	95	95	-----	-----	(93)	91	-----	88	92.1	89	91	87	94	-----	90.3
Endobasion-nasion	(103)	-----	99	105	-----	-----	-----	101	-----	101	101.8	-----	-----	96	-----	102	99.0
Facial module, total	(124.0)	-----	125.5	133.0	-----	-----	-----	122.5	-----	-----	126.3	-----	-----	-----	-----	-----	-----
Nasal height	47	-----	49	(55)	50	50	-----	49	-----	-----	50.0	-----	-----	49	-----	50	49.5
Nasal breadth	24	-----	24	(26)	25	23	-----	24	-----	-----	24.3	(24)	-----	26	-----	24	25.0
Mean orbital height	34	-----	36	40	34	-----	36	34	-----	-----	35.7	33.5	-----	-----	36	34	34.5
Mean orbital breadth	38.5	-----	42	44	41	-----	43	41	-----	-----	41.6	40	-----	-----	41	41.5	41.0
External palatal length	56	-----	55	-----	-----	-----	51	52	-----	-----	53.5	51	-----	48	-----	-----	49.5
External palatal breadth	63	-----	61	-----	-----	-----	62	64	-----	-----	62.5	60	-----	57	-----	-----	58.5
Bigonial breadth	103	104	102	106	-----	100	111	111	-----	-----	105.3	-----	-----	(94)	-----	-----	-----
Symphisis height	(37)	-----	34	33	36	(35)	34	35	-----	39	35.4	35	(31)	(25)	35	-----	31.5
Indices:	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
Cranial	72.9	(82.3)	73.6	86.5	-----	67.5	(77.1)	74.2	68.9	76.3	75.9	71.2	(68.1)	75.2	78.6	69.5	72.5
Mean height	87.4	(92.9)	87.3	(82.4)	-----	-----	(87.1)	87.3	-----	(83.5)	86.9	-----	-----	89.2	-----	-----	-----
Total facial	(89.3)	-----	85.9	82.2	-----	-----	-----	(89.9)	-----	-----	86.8	-----	-----	-----	-----	-----	-----
Upper facial	52.7	-----	51.1	51.4	-----	-----	-----	(51.9)	-----	-----	51.2	-----	-----	-----	-----	54.9	-----
Fronto-parietal	67.2	(65.5)	70.9	60.1	-----	-----	(68.9)	(67.4)	-----	61.9	66.3	-----	(71.0)	68.5	-----	-----	-----
Cranio-facial	95.6	(97.1)	100.8	92.4	-----	-----	-----	9.56	-----	-----	96.3	-----	98.4	-----	-----	-----	-----
Nasal	51.1	-----	50.0	(47.3)	50.0	46.0	-----	49.0	-----	-----	49.1	-----	-----	53.1	-----	48.0	50.3
Orbital	88.4	-----	85.7	90.9	83.0	-----	83.7	82.9	-----	-----	85.9	83.8	-----	-----	-----	81.9	84.2
Palatal	112.5	-----	110.9	-----	-----	-----	121.6	123.1	-----	-----	116.8	117.6	-----	118.8	87.8	-----	118.2
Bigonial-bizygomatic	78.6	77.0	75.6	76.6	-----	-----	86.0	-----	-----	-----	78.8	-----	-----	-----	-----	-----	-----

See footnote at end of table.

TABLE 4.—*Measurements and indices of Tollifero and Clarksville crania*[1]—Continued

CLARKSVILLE SITE

	Males											
USNM No. Burial No.	380844 4	380846 6a	380849 9	380850 14	380854 20	380855 21	380858 24	380872 48	380875 52	380877 54	380888 76	Mean
	Mm.	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*
Glabello-occipital length	184	185	179	(188)	(172)	178	202	(183)	174	174		181.9
Maximum breadth	143	138	150	147	(144)	134			142	149	139	142.9
Basion-bregma height		145	131	154		144			(140)	(142)		142.7
Auricular height	(124)	124	124	132	(113)	117	(120)	(128)	(120)	123	121	122.4
Basion-porion height		17		20					(21)	(22)		20.0
Cranial module		156.0	153.3	(163.0)		152.0			(152.0)	(155.0)		156.5
Total facial height		(119)		(122)		(112)				118		117.8
Upper facial height		(73)		(72)		(68)				72		70.1
Bizygomatic breadth		(140)		(149)		(136)				147	(143)	143.0
Minimum frontal breadth	98	98		108	92	92		101	94	98		97.6
Endobasion-nasion		107	103	111		112			(97)	101		105.2
Facial module, total		(129.5)		(135.5)		(124.0)				132.5		130.4
Nasal height		(55)		(54)		(52)				53		53.5
Nasal breadth	(27)	27		27		23				26		26.0
Mean orbital height		(35)		(37)		(36.5)				34		36.0
Mean orbital breadth		(44)		(45)		(52.5)	39			43.5		43.1
External palatal length		61		65		53				(56)		58.8
External palatal breadth		67			63	65				69		66.0
Bigonial breadth	102	102	107	(116)	(89)	104			117	113		106.3
Symphisis height	37	33	33		33	35	35		(34)	33		34.1
Indices:	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
Cranial	77.7	74.6	83.8	(78.2)	(83.7)	75.3			81.6	85.6		80.1
Mean height		89.5	79.6	(91.7)		92.3			(88.6)	(87.7)		88.9
Total facial		(85.0)		(81.9)		(82.4)				80.3		82.4
Upper facial		(52.1)		(48.3)		(50.0)				49.0		49.0
Fronto-parietal	67.1	71.0		73.5	(63.9)	68.7			(66.2)	65.8		68.0
Cranio-facial		(101.5)		(101.4)		(101.5)				98.7	(102.9)	101.2
Nasal		(49.1)		(50.0)		(44.2)				46.1		47.3
Orbital		(79.5)		82.2		85.9				79.1		82.5
Palatal		109.8				122.6				(123.2)		118.5
Bigonial-bizygomatic		(72.9)		(77.9)		(76.5)				76.9		73.8

	Females										
USNM No. Burial No.	380848 8	380856 22	380861 29	380863 32	380867 38	380868 39	380870 44	380874 51	380876 53	380878 55	Mean
	Mm.	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*
Glabello-occipital length		(174)		183	171	170	181	(177)	(177)	170	175.4
Maximum breadth		(133)	(137)	137	141	140	131	136	(129)	143	136.3
Basion-bregma height			137			132	130			131	132.5
Auricular height		(109)	119	114	113	117	114	(115)	(118)	116	115.0
Basion-porion height	(12)		19			18	19			18	17.2
Cranial module						147.3	147.3			148.0	148.1
Total facial height						107	106			106	106.3
Upper facial height						63	66			65	64.7
Bizygomatic breadth		(120)	(126)			(129)	(128)			134	127.4
Minimum frontal breadth		(88)	(91)			92	90		86	89	89.3
Endobasion-nasion			(95)			(96)	104			97	98.0
Facial module, total						(118.0)	(117.0)			120.0	118.3
Nasal height						48	49			50	49.0
Nasal breadth	27					(25)	26			27	26.0
Mean orbital height			(40)			34	32.5			33.5	34.3
Mean orbital breadth			(42)				40.5			(39.5)	40.4
External palatal length							56			54	55.0
External palatal breadth							65			61	63.0
Bigonial breadth	92	93				100	95	93	(85)	96	93.4
Symphysis height	28	(24)			31	32	31		34	31	30.6
Indices:	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
Cranial		(76.4)		74.8	82.6	82.4	72.4	(76.8)	(72.9)	84.1	77.7
Mean height						85.2	83.3			83.7	84.1
Total facial						(82.9)	(82.8)			79.1	83.4
Upper facial						(48.8)	(51.6)			48.5	50.8
Fronto-parietal		(66.2)	(66.4)			65.7	68.7		(66.7)	62.2	65.5
Cranio-facial		(90.2)	(92.0)			(92.1)	97.7			93.7	93.5
Nasal						(52.1)	53.1			54.0	53.1
Orbital			(95.2)				80.2			84.8	84.9
Palatal							116.1			112.9	114.5
Bigonial-bizygomatic		(77.5)				(77.5)	(74.2)			71.6	73.3

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[1] In all tables figures in parentheses represent estimated measurements, or the indices derived from them.

more than breadth, resulting in a nose that is not only much larger, but relatively narrower than that of the earlier population. Palatal dimensions show the greatest increase in size (about 12 percent) but only a slight change in shape. It is unfortunate that the damage to the landmarks determining the facial triangle is so common, for the variations in the facial components suggest interesting changes in prognathism. In view of the increase in other craniofacial dimensions, the decrease in the height of the mandibular symphysis seems of considerable significance. This decrease may have been associated with the diminished chewing stresses resulting from a softer diet. It does not seem to have been associated with any change in the occlusal pattern or an increase in frequency of overbite. It is notable that in the females, the facial, nasal, and orbital modules are about the same in both populations. The cranial and palatal modules are larger in the Clarksville females. As in the males, the face and its components, while about the same size, are shorter and broader.

A number of differences appear in the postcranial skeletons (table 5). As previously noted, the long bones of the male Clarksville skeletons seem to be, on the average, about 3 to 4 percent longer than those of the Tollifero skeletons, while the average lengths of the long bones of the female skeletons remain unchanged. Yet the body proportions, reflected in the radio-humeral, tibio-femoral, and intermembral indices, are about the same, and accord well with the indices from other Indian groups (see table 7). Whereas the cranial module shows an increase of 2.6 percent in the Clarksville males, increase in femoral length is 4.6 percent. Possibly, then, the postcranial skeleton is more susceptible to variation in size than the skull. At any rate, it would seem that while an increase in caloric intake may have increased height, it did not greatly affect the relative proportions of the limbs.[9] Although, as noted, the Clarksville males seem to have been somewhat taller than the earlier Tollifero males (table 7), increase in size again appears to have been restricted to the men, for long bone lengths in the women of the two groups seem to have been about the same.

It would seem that two agencies of change are involved. The increase in cranial and postcranial size, seen only in the men, is more likely to be due to dietary change than to change in genotype. Changes in facial proportion, seen in both men and women, may be genotypic. Consideration of both males and females is necessary to distinguish the roles of these two factors.

The male tibiae of the Tollifero skeletons show one feature calling for special comment: Except in two individuals—the two brachycranic

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[9] Roberts (MS., 1953, p. 114) notes an increase in the tibio-femoral index with ambient climate, interpreting this as a thermoregulatory device. If this is so, it is possible that an increase in heat production, accompanying increased caloric intake, could produce an analogous effect on limb proportions.

TABLE 5.—*Measurements and indices of Tollifero and Clarksville long bones*

TOLLIFERO SITE

	Males												Females				
USNM No.	380891	380892	380893	380902	380906	380908	380911	380913	380915	380917	380919	Mean	380897	380900	380901	380903	Mean
Burial No.	2	3	4	19	24	27	35	37	39	41	43		9	16	17	21	
	Mm.	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*
Femur, length:																	
Right	407	--------	--------	426	467	447	[1] (437)	438	--------	--------	425	435.3	(441)	--------	412	--------	426.5
Left	407	463	428	424	466	446	(443)	442	437	(461)	427	440.3	(443)	--------	413	--------	428.0
Tibia, length:																	
Right	337	396	--------	361	403	368	359	378	--------	--------	355	369.6	--------	(340)	332	--------	336
Left	335	395	--------	[3] 349	395	364	361	383	368	--------	358	367.8	358	--------	333	--------	345
Midshaft diameters:																	
A.-p., (max.):																	
Right	33	33	--------	37	35	33	34	35	--------	--------	35	34.4	--------	--------	24	--------	--------
Left	33	34	--------	34	35	36	35	36	35	--------	34	34.7	--------	--------	28	--------	--------
Lateral, (min.):																	
Right	19	21.5	--------	18	22	15.5	17	18	--------	--------	19	18.8	--------	--------	16.5	--------	--------
Left	18	22	15	18	21	16	17	18	19	--------	19	18.3	--------	--------	17	--------	--------
Fibula, length:																	
Right	--------	--------	--------	344	390	--------	(348)	370	--------	--------	348	360.0	--------	335	(325)	--------	330
Left	326	--------	--------	--------	384	--------	(349)	--------	--------	--------	350	352.1	--------	--------	--------	--------	--------
Humerus, length:																	
Right	292	--------	316	318	335	--------	314	330	316	--------	307	316.0	319	300	284	--------	301
Left	295	336	318	315	333	--------	313	--------	--------	--------	307	316.7	308	(290)	(281)	--------	290
Radius, length:																	
Right	237	--------	--------	--------	261	--------	242	256	252	--------	(238)	247.7	230	--------	224	235	230
Left	235	262	--------	--------	260	248	--------	253	252	--------	239	250.1	236	220	--------	--------	228
Ulna, length:																	
Right	260	--------	269	--------	280	--------	263	278	268	--------	--------	269.7	252	--------	245	--------	249
Left	256	287	--------	--------	275	267	--------	--------	272	--------	259	269.8	(258)	254	--------	252	255
Indices:	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
Tibial midshaft:																	
Right	57.6	65.2	--------	48.6	62.9	47.9	50.0	51.4	--------	--------	54.3	54.6	--------	--------	68.8	--------	--------
Left	54.5	64.7	--------	52.9	60.0	44.4	48.6	50.0	54.3	--------	55.9	53.9	--------	--------	60.7	--------	--------
Tibio-femoral:																	
Right	82.8	--------	--------	84.7	86.3	82.3	82.2	86.3	--------	--------	83.5	84.0	--------	--------	80.6	--------	80.6
Left	82.3	85.3	--------	--------	84.8	81.6	81.5	86.7	84.2	--------	83.8	83.8	80.8	--------	80.6	--------	80.7
Radio-humeral:																	
Right	81.2	--------	--------	--------	77.9	--------	77.0	77.6	79.7	--------	77.5	78.5	72.1	--------	78.9	--------	75.5
Left	79.7	78.0	--------	--------	78.0	--------	--------	--------	--------	--------	77.9	78.3	76.6	75.9	--------	--------	77.8
Intermembral (H+R/F +T):																	
Right	71.1	--------	--------	--------	68.5	--------	69.8	71.8	--------	--------	69.9	70.2	--------	--------	68.3	--------	68.3
Left	71.4	69.7	--------	--------	68.9	--------	--------	--------	--------	--------	69.6	70.2	67.9	--------	--------	--------	67.9
	Cm.	*Cm.*	*Cm.*	*Cm.*	*Cm.*	*Cm.*	*Cm.*	*Cm.*	*Cm.*	*Cm.*	*Cm.*	*Cm.*	*Cm.*	*Cm.*	*Cm.*	*Cm.*	*Cm.*
Estimated height [2]	160	177	164	165	177	169	167	170	168	172	165	168	160	160	157	--------	160

See footnotes at end of table.

TABLE 5.—*Measurements and indices of Tollifero and Clarksville long bones*—Continued

CLARKSVILLE SITE

	Males																
USNM No. Burial No.	380844 4	380846 6a	380847 6b	380850 14	380854 20	380855 21	380353 24	380866 36	380869 42	380871 45	380877 54	380879 56	380880 64	380884 70	380886 73	380887 75	Mean
Femur, length:	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*
Right	468	456	444	463	(481)	446	--------	(431)	473	(455)	(476)	(423)	--------	--------	470	442	456.8
Left	470	--------	(453)	475	(480)	453	--------	(437)	473	(462)	482	430	461	--------	467	438	460.1
Tibia, length:																	
Right	406	380	--------	384	405	384	--------	--------	--------	379	--------	367	380	(374)	--------	--------	384.3
Left	410	383	374	--------	410	384	--------	--------	--------	380	398	370	379	--------	--------	--------	386.4
Midshaft diameters:																	
A.-p., (max.):																	
Right	34	29	35	34	33	32	34	32	35.5	38	33	(34)	35	--------	--------	--------	33.7
Left	33	29	35	33	33	32	35	32	34.5	36	33	36	35	--------	--------	--------	33.6
Lateral, (min.):																	
Right	23	18	17	21	22	22	20.5	22	21	22	22	(25)	22	--------	--------	--------	21.3
Left	23	17.5	18	21	20	22	20	20	20	21	19	24	22	--------	--------	--------	21.7
Fibula, length:																	
Right	387	--------	--------	--------	--------	374	--------	--------	--------	(369)	379	--------	--------	--------	--------	--------	377.3
Left	387	373	371	--------	--------	376	--------	--------	--------	(374)	--------	--------	362	--------	--------	--------	373.8
Humerus, length:																	
Right	321	327	--------	347	328	(312)	--------	--------	--------	330	336	--------	315	--------	--------	--------	327.0
Left	324	327	--------	348	(333)	312	320	(327)	--------	330	342	--------	315	--------	--------	--------	327.8
Radius, length:																	
Right	260	259	252	246	--------	256	257	--------	(257)	252	265	--------	--------	--------	--------	--------	256.0
Left	259	--------	(254)	--------	--------	254	--------	--------	--------	254	265	--------	255	--------	--------	--------	256.8
Ulna, length:																	
Right	273	281	275	--------	--------	274	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	277.0
Left	276	--------	277	--------	--------	271	--------	--------	--------	271	276	--------	--------	--------	--------	--------	274.2
Indices:	*Per-cent*	*Per-cent*	*Per-cent*	*Per-cent*	*Per-cent*	*Per-cent*	*Per-cent*	*Per-cent*	*Per-cent*	*Per-cent*	*Per-cent*	*Per-cent*	*Per-cent*	*Per-cent*	*Per-cent*	*Per-cent*	*Per-cent*
Tibial midshaft:																	
Right	67.6	62.1	48.6	61.8	66.7	68.8	60.2	68.7	59.1	57.9	66.7	73.5	62.9	--------	--------	--------	63.4
Left	69.7	60.3	51.4	63.6	60.6	68.8	57.1	62.5	57.8	58.3	57.6	66.7	62.9	--------	--------	--------	61.3
Tibio-femoral:																	
Right	86.8	83.4	--------	82.0	84.2	86.0	--------	--------	--------	--------	--------	85.7	--------	--------	--------	--------	84.6
Left	87.2	--------	82.5	--------	85.4	84.8	--------	--------	--------	83.3	82.6	86.0	82.2	--------	--------	--------	84.3
Radio-humeral:																	
Right	81.0	79.2	--------	70.9	--------	82.0	--------	--------	--------	76.4	78.9	--------	--------	--------	--------	--------	78.1
Left	80.0	--------	--------	--------	--------	81.4	--------	--------	--------	77.0	77.5	--------	81.0	--------	--------	--------	79.4
Intermembral (H+R/F+T):																	
Right	66.5	70.1	--------	70.0	--------	68.4	--------	--------	--------	70.0	--------	--------	--------	--------	--------	--------	69.0
Left	66.3	--------	--------	--------	--------	68.0	--------	--------	--------	69.3	69.0	--------	67.9	--------	--------	--------	68.1
	Cm.	*Cm.*	*Cm.*	*Cm.*	*Cm.*	*Cm.*	*Cm.*	*Cm.*	*Cm.*	*Cm.*	*Cm.*	*Cm.*	*Cm.*	*Cm.*	*Cm.*	*Cm.*	*Cm.*
Estimated height	178	172	171	174	173	172	--------	165	174	173	178	167	173	173	173	166	173

	Females									
USNM No. Burial No.	380343 3	380848 8	380856 22	380861 29	380863 32	380868 39	380870 44	380878 55	380855 71	Mean
Femur, length:	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*
Right		(390)	(421)	(449)	(467)	(402)	433	428		427.1
Left	412	(393)		(441)	465	(402)	(429)	425		423.9
Tibia, length:										
Right		321				335	338	360		338.5
Left	330	323	342	355			333	364		341.1
Midshaft diameters:										
A.-p., (max.):										
Right		25	26	30		25	25	27	30.5	26.9
Left	32	27	27	30		26	25	27	31	28.1
Lateral, (min.):										
Right		20	21	22		19	18	20	20.5	20.0
Left	20	20	21	21		19	18.5	20	20	19.9
Fibula, length:										
Right	(333)		(335)							334
Left										
Humerus, length:										
Right			290			(294)	(295)	309	308	299.2
Left		285			(337)	(292)	294	303		302.4
Radius, length:										
Right	(223)		230				225	232		227.5
Left	(221)	206	226			222	233			219.6
Ulna, length:										
Right						240	243	252		251.0
Left		(219)	[3]225			238	242	248		234.4
Indices;										
Tibial midshaft:	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
Right		80.0	80.8	73.3		76.0	72.0	74.1	67.2	74.8
Left	62.5	74.1	77.8	70.0		73.1	74.0	74.1	64.5	71.3
Tibio-femoral:										
Right		82.3				83.3	78.0	84.1		81.9
Left	80.0	82.2		80.5			77.6	85.6		81.2
Radio-humeral:										
Right			79.3				76.3	75.0		76.9
Left		72.3				75.8	75.9			74.7
Intermembral (H+R/F+T):										
Right							67.4	61.4		64.4
Left		68.6					67.8			68.2
	Cm.	*Cm.*	*Cm.*	*Cm.*	*Cm.*	*Cm.*	*Cm.*	*Cm.*	*Cm.*	*Cm.*
Estimated height	156	154	159	164	169	156	161	163		160

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[1] Estimated.

[2] Heights based on length of tibia+femur, or femora alone, where tibiae were missing; estimated from the tables for American White males and females, prepared by Trotter and Gleser (1952, p. 496, 498). It should be noted that the tibio-femoral indices of the Whites are around 79 percent, while those of the male Indians are around 84 percent. This may be interpreted as meaning either that the femora of the Indians are relatively shorter than those of the Whites, or that their tibiae are relatively longer. In either case, the difference in body build implied by this index suggests that the formulae are not particularly suitable, and therefore the estimated heights are not to be taken too literally. The main purpose of estimating stature, however, has been to give some indication of variation in total body size within and between populations. Since there is no assurance that any other formulae available are likely to give more accurate estimates, these are probably as appropriate as any.

[3] Shortened because of fracture.

individuals mentioned above—all of the midshaft indices range between 45 and 55 percent—a range unusually low even for American Indians. This is in distinct contrast to the Clarksville male tibiae, where with one exception (USNM 380847, an older person), the midshaft index ranges from 57 to 69 percent. The Tollifero tibiae are both narrower transversely and thicker anteroposteriorly than those of the Clarksville Series, so that the difference in shaft index cannot be attributed to anteroposterior thickening or to the marked anteroposterior bowing which many of them show. The tibiae of the only Tollifero female in which midshaft indices are obtainable are rounder, falling within the ranges for the Clarksville Series.

Platycnemia or tibial flattening has been a subject of controversy and speculation since Manouvrier (1888) compared the shapes of human and anthropoid tibial shafts (cf. Angel, 1946, pp. 76–80). It has been attributed, among other things, to subnutrition, squatting, "morphological inferiority," and mountain climbing, each theory having nearly as many opponents as proponents. Considering the dates of these series, "morphological inferiority" (Oetteking, 1930)—that is, an affinity to the anthropoid—does not seem a suitable explanation for the flatness of the Tollifero tibiae, though it may be appropriate in other cases. Functional and/or dietary explanations are much more likely to be correct.

Of the functional "causes" of platycnemia, the muscular stresses of squatting are among those most frequently invoked, although other postures also involve hyperflexion of the tibiae. Modern Westerners rarely squat, usually assuming some other posture when they sit on the floor or on the ground (perhaps this partially explains why they are more conscious of muscular stresses in squatting than in other postures); and it is unlikely that the earliest European explorers behaved much differently, particularly if they were of the upper classes and accustomed to sitting on chairs of some sort. One would expect, then, that they would record unfamiliar customs of sitting as meticulously as they recorded other unfamiliar things—ornaments, clothing, styles of cutting the hair, and so forth. Nevertheless, although White and other early artists (cf. Lorant, 1946) show the Southeastern Indians sitting on the ground in various positions, only a few individuals, participating in ceremonies, are shown squatting with the thighs pressed against the calves of the legs. This is scant evidence for drawing conclusions regarding their habits, but it does suggest that squatting may not have been customary, even among the Clarksville people. The higher incidence of shin injuries, which will be discussed later, may bear this out. The Tollifero people, on the other hand, may have been squatters. However, as Hewes (1955) has pointed out, there are numerous ways of squatting; and, one may add, each of these probably leaves its own individual combination of markings on the bones. To determine postural habits with any probability of accuracy, one would have to follow the procedure of Charles (1894), and Angel (1946) and systematically observe *all* of the lower trunk—the ilium, acetabulum, femur, knee, and ankle, as well as the shape of the tibial shaft. The Occaneechi skeletons, unfortunately, are neither complete enough nor numerous enough to make this procedure worth while. Nevertheless, change in postural habit may be a partial explanation of the difference in form of the tibial shaft.

Change in diet is another possible explanation for the difference in the form of the tibial shaft at the two sites. Buxton (1938) noted that platycnemia and platymeria were often associated with flattening of the humerus and radius, and proposed that "assuming the area for the muscles is kept practically constant, less actual bone substance is required for the construction of the shaft of a flattened bone than of a cylindrical one" (pp. 34–35). Although the condition of the Occaneechi skeletons makes it impractical to attempt correlations paralleling Buxton's, there is other evidence supporting this hypothesis. Differences in diet, and the increase in height in the Clarksville males have already been discussed, supporting the possibility of subnutrition among the Tollifero people. Marked anteroposterior bowing of the tibiae was seen among the skeletons from both sites. At the Clarksville site, this bowing was usually accompanied by inflammatory changes, apparently of nutritional origin. Since many of the bowed Tollifero tibiae seem to show similar inflammatory changes, nutritional factors may also have contributed to the platycnemia.

Before comparing the Occaneechi skeletal material with that from other Southeastern sites, the few burials which may have come from earlier populations should be considered. These were found either under house floors or under layers of river sand. The stratigraphic evidence alone is insufficient to indicate whether the burials were made during the early years of occupation, or long before. At the Tollifero site, the remains of an adult male and an infant (USNM 380917, –918) were found together in a single pit. The male skull is one of the narrowest of the Tollifero series, and the teeth show the pattern of wear typical at this site. Long bone length is about average. The strongest evidence for these skeletons belonging to the Tollifero population, however, lies in the nature of the burial, for two other graves containing the bundled bones of an adult male and the body of an infant were found at this site. The three Clarksville burials (USNM 380861, –862 and –869) were found in individual graves. The skull of the first is wider than average for this population, but the flattened tibiae of the last approach the Tollifero range. Nevertheless, the pattern of tooth wear and decay in all three, and the manner of burial indicated by the cuts on the bones are characteristic of the other Clarksville skeletons. Although, as the stratigraphy suggests, these may be among the earliest burials at these sites, there is no reason for excluding them from their respective series.

COMPARISON OF THE OCCANEECHI SKELETAL MATERIAL WITH OTHER SOUTHEASTERN INDIAN POPULATIONS

Appropriate series for comparison with either the Tollifero or Clarksville Series are not easily found. Neither the Indian Knoll (Snow, 1948) nor Alabama Shell Mound (Newman and Snow, 1942) series, cited for comparison in tables 6 and 7, are particularly applicable, since they are too early in time and are separated from the Tollifero site by several mountain ranges. Other series, somewhat later in time, such as those from the Robbins mound in Kentucky (Snow, 1942), Hiwassee Island in eastern Tennessee (Lewis and Kneberg, 1946), show cranial deformity and are also remote geo-

TABLE 6.—*Male crania from the Tollifero and Clarksville sites, compared with other Southeastern crania*

	Mean sigma [1]	Early series			Later series		
		Tollifero site	Indian Knoll [2]	Alabama Shell Mound [3]	Clarksville site	Koger's Island [4]	Munsee [5]
	Mm.	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*
Glabello-occipital length	5.42	181.77	178.8	185.3	181.9	174.0	190.8
Maximum breadth	4.80	137	135.4	133.7	142.9	145.4	141.0
Basion-bregma height	4.68	139	139.9	141.6	142.7	143.5	139.0
Auricular height	----------	118.11	119.0	120.6	122.4	----------	----------
Basion-porion height	----------	20.28	24.2	----------	20.0	----------	----------
Cranial module	----------	152.6	151.4	153.6	156.5	155.0	155.6
Total facial height	----------	117.25	118.9	119.6	117.8	----------	121.5
Upper facial height	3.94	69.33	70.0	71.2	70.13	73.0	71.5
Bizygomatic breadth	5.41	135.2	136.0	138.1	143.0	142.2	139.0
Minimum frontal breadth	----------	92.14	91.6	93.4	97.6	95.7	94.0
Endobasion-nasion	----------	101.8	102.5	103.0	105.2	104.5	103.0
Facial module, total	----------	126.25	127.5	128.9	130.4	----------	----------
Nasal height	2.83	50.0	51.0	51.5	53.5	52.7	51.0
Nasal breadth	1.79	24.33	24.4	25.7	26.0	25.8	26.0
Mean orbital height	1.67	35.66	33.3	36.2	36.0	----------	34.0
Mean orbital breadth	1.39	41.59	42.7	42.6	43.1	----------	39.0
External palatal length	----------	53.5	52.8	51.2	58.8	----------	56.0
External palatal breadth	----------	62.5	63.7	63.0	66.0	----------	68.0
Bigonial breadth	----------	105.28	104.2	106.0	106.3	----------	104.0
Symphysis height	----------	35.38	34.4	36.8	34.1	----------	37.5
Indices;	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
Cranial	3.12	75.9	75.8	72.8	80.1	83.6	73.9
Mean height	----------	86.88	89.1	----------	88.9	----------	----------
Total facial	----------	86.84	86.9	87.0	82.4	----------	87.6
Upper facial	----------	51.2	51.4	50.8	49.0	52.2	51.4
Fronto-parietal	----------	66.27	67.8	69.7	68.0	67.2	----------
Cranio-facial	----------	96.29	101.2	102.6	101.2	98.4	----------
Nasal	4.15	49.07	48.0	50.4	47.3	48.9	51.1
Mean orbital	4.05	85.85	78.4	88.4	82.5	----------	87.5
Palatal	----------	116.8	120.7	[6] 122.9	118.5	----------	120.7
Bigonial-bizygomatic	----------	78.76	76.0	76.8	73.8	----------	----------

[1] Stewart, 1943 a, p. 265.
[2] Snow, 1948, p. 440.
[3] Lu 25 series, Newman and Snow, 1942, p. 409.
[4] "Total Koger's Island," Newman and Snow, 1942, p. 434.
[5] Hrdlička, 1916.
[6] Newman and Snow give this mean as 129.2, which appears to be a misprint.

TABLE 7.—*Long bones of Tollifero and Clarksville males, compared with those from other Southeastern sites*

	Early sites			Later sites		
	Tollifero site	Indian Knoll [1]	Alabama Shell Mound [2]	Clarksville site	Koger's Island [3]	Munsee [4]
Femur, length:	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*	*Mm.*
Right	435.3	437.0	443.3	456.8	449.8	458
Left	440.3	440.0	442.8	460.1	451.0	459
Tibia, length:						
Right	369.6	362.3	363.9	384.3	377.2	[5] 383
Left	367.8	362.9	368.2	386.4	375.4	[5] 386
Midshaft diameters:						
A.-p., (max.):						
Right	34.4	30.0	32.6	33.7	34.3	32.8
Left	34.7	30.1	33.0	33.6	33.9	32.5
Lateral, (min.):						
Right	18.8	19.9	20.9	21.3	21.9	21.4
Left	18.3	19.9	21.0	21.7	21.6	21.6
Fibula, length:						
Right	360.0	353.4	----------	377.3	----------	369
Left	352.1	354.8	----------	373.8	----------	370
Humerus, length:						
Right	316.0	318.9	320.7	327.0	326.8	325
Left	316.7	320.7	318.8	327.8	320.9	326
Radius, length:						
Right	247.7	246.1	245.0	256.0	253.9	257
Left	250.1	246.2	245.3	256.8	255.4	257
Ulna, length:						
Right	269.7	255.1	263.6	277.0	272.6	276
Left	269.8	256.1	261.9	274.2	273.4	275
Indices;						
Tibial midshaft:	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
Right	54.6	66.7	64.2	63.4	62.1	65.4
Left	53.9	66.3	64.1	61.3	64.9	66.6
Tibio-femoral:						
Right	84.0	83.5	83.7	84.6	83.3	84.4
Left	83.8	83.2	82.2	84.3	82.6	84.5
Radio-humeral:						
Right	78.5	76.8	76.9	78.1	78.4	78.8
Left	78.3	76.9	78.4	79.4	79.0	78.8
Intermembral (H+R/F+T):						
Right	70.2	71.1	----------	69.0	----------	----------
Left	70.2	70.7	----------	68.1	----------	----------
	Cm.	*Cm.*	*Cm.*	*Cm.*	*Cm.*	*Cm.*
Estimated height [6]	168	167	168	173	171	173

[1] Snow, 1948, p. 455 ff.
[2] Newman and Snow, 1942, p. 438 (Lu 25 S. M. series.)
[3] Newman and Snow, 1942, p. 438 (Lu 92 series).
[4] Hrdlička, 1916.
[5] Bicondylar length; all other lengths maximum.
[6] See footnote 2, table 5.

graphically. The few crania from Maryland and Virginia (Hrdlička, 1927), Georgia and Florida (Hrdlička, 1922, 1940) are both remote geographically, and of unknown archeological horizon. Appropriate late series are equally rare: There were few measurable skulls from the Peachtree site in western North Carolina (Stewart, 1941); and the late Alabama (Newman and Snow, 1942) and Munsee (Hrdlička, 1916) skeletal series are both small in number and geographically remote. Consequently, little in the way of comparison is either justified or possible.

With due allowance for these disadvantages, the Tollifero crania seem to fit in fairly well with the earlier Southeastern series, being intermediate in size between the Indian Knoll and Alabama Shell Mound Series, and corresponding fairly well to both in indices (cf.

table 6). Except for size, they also agree fairly well with the much later, northern Munsee group. The Clarksville crania, on the other hand, agree better with their local predecessors, the Tollifero group, than with any of the other groups.

About the only conclusion possible regarding cranial type is a tentative confirmation of the observation made nearly 40 years ago by Hrdlička (1922, p. 113) and confirmed by Newman and Snow (1942, p. 407), that the older population of the Southeast was dolichocranic, while later populations were more brachycranic. Whether this change in cranial type is due to intermixture with indigenous southern and eastern brachycephals, as Hrdlička (1916, 1922) thought; or to incoming brachycranics, as suggested by Newman and Snow (1942); or to evolution in situ, there is not yet enough evidence to decide. Regarding body size and build, it would seem that the earlier peoples were somewhat shorter than the later, but that increase in body size did not change body proportions.

POPULATION COMPOSITION AND LENGTH OF LIFE

The distribution of ages and sexes at the Tollifero and Clarksville sites show a number of differences (table 8). Infant mortality at the two sites is about the same, about 16–17 percent, but the proportion of juvenile deaths at the Clarksville site has nearly doubled. At the Tollifero site, about one-fourth of the persons represented failed to reach adult life; but at the Clarksville site, the juvenile mortality had increased to nearly 45 percent, with a large increase in deaths among young adults. The sex ratio also offers certain peculiarities. At the Clarksville site the sex ratio is about 3:2 in favor of the males; but at the Tollifero site, the ratio is nearly 5:2. At both sites, the males appear to have outlived the females. Although early death was the rule at both sites, in general the adults at the Tollifero site appear to have reached slightly more advanced ages than those from Clarksville. This is hardly what one would have expected from the improved diet of the later peoples. It is well to recall at this point that these distributions are unlikely to be an artifact of selection by preservation, for the population estimates are based on the total number of skeletal remains found, including those too fragmentary to retain. The latter, as mentioned above, were described in field notes, and/or in the laboratory before being discarded; although the accuracy of these records could not be checked against the specimens, they are unlikely to have introduced differences as marked as those noted.

It is of course possible that the small size of the samples may have influenced the distribution of ages and sexes at the two sites. This possibility becomes less likely when these distributions are compared with age and sex distributions of the skeletal material from Hiwassee

TABLE 8.—*Age and sex distribution of Occaneechi population samples*

Age at death	Tollifero site (Ha 6) (N=37)				Clarksville site (Mc 14) (N=77)			
	Sex? No.	Male No.	Female No.	Per-cent	Sex? No.	Male No.	Female No.	Per-cent
Birth to 3 years	6	--------	--------	16.0	13	--------	--------	17.0
4–6 years	--------	--------	--------	--------	6	--------	--------	7.8
7–12 years	2	--------	--------	5.0	4	--------	--------	5.2
13–17 years	1	--------	--------	3.0	6	1	2	11.7
18–20 years	--------	--------	--------	--------	--------	1	1	2.6
21–35 years	--------	5	3	21.6	--------	9	12	27.3
35–45 years	--------	7	3	27	--------	6	--------	7.8
45–55 years	--------	1	--------	2.7	--------	6	--------	7.8
55+ years	--------	--------	--------	--------	--------	--------	--------	--------
Adult, age indeterminate	--------	7	2	24.0	5	5	3	17.0
Under 21	9	--------	--------	24.0	29	2	3	44.1
Males	--------	20	--------	54.0	--------	28	--------	36.4
Females	--------	--------	8	22.0	--------	--------	18	23.4

TABLE 9.—*Age and sex distribution of Hiwassee Island populations*[1]

Age at death	Hamilton component (N=173)				Dallas component (N=1			
	Sex? No.	Male No.	Female No.	Per-cent	Sex? No.	Male No.	Female No.	Per-cent
Birth to 3 years	17	--------	--------	10.0	62	--------	--------	33.0
3–12	22	--------	--------	12.7	33	--------	--------	17.5
13–17	5	--------	--------	2.9	11	--------	--------	5.8
18–20	--------	--------	--------	--------	--------	3	6	4.8
20–35	--------	28	12	23.1	--------	12	10	11.7
35–45	--------	13	3	9.2	--------	8	13	11.2
45–55	--------	4	2	3.5	--------	2	1	1.6
55+	--------	3	1	2.3	--------	1	1	1.0
Adult, age indeterminate	58	4	1	36.4	22	3	2	14.4
Under 21	44	--------	--------	25.4	115	--------	--------	61.2
Males	--------	52	--------	30.5	--------	29	--------	15.5
Females	--------	--------	19	11.0	--------	--------	33	17.5

[1] From Lewis and Kneberg, 1946, pp. 153, 157.

Island, described by Lewis and Kneberg (1946). Excavations on Hiwassee Island in southeastern Tennessee, which was occupied until the 1700's, yielded three series, the oldest of which, the Hamilton component, is roughly analogous in time to the Tollifero site; the Dallas component, roughly analogous to the Clarksville site; and a historic component. Table 9, summarizing the age and sex distributions of the Hamilton and Dallas components, series of 173 and 188 burials, respectively, shows a sex ratio of nearly 3:1 in the earlier Hamilton population with the males outliving the females by a considerable margin.[10] In the later Dallas population, there is a slight excess of females over males, but the numbers are more nearly equal. The juvenile mortality of the Hamilton and Dallas components resembles that of the Tollifero and Clarksville sites: At the earlier site, approximately one-fourth of the skeletons were those of persons under 21 years of age; at the later site, 61 percent of the population failed to reach adult life. Part of the later increase in juvenile mortality may be attributable to the tripling of infant mortality; but the remainder suggests a nearly doubled death rate during childhood and adolescence.

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[10] For the Robbins mound (Be 3), an Adena site in Boone County, Kentucky, Snow (1942) reports a 3:1 ratio, with the majority of deaths in the age group 21–35 years. Hertzberg (1940) found a similar sex ratio at the Ricketts site.

At Hiwassee Island, Lewis and Kneberg attribute the doubling of the juvenile death rate in their Dallas site to the introduction of diseases with the coming of the Europeans, citing among other references, Hariot's remarks in 1587 about the effects of English contact on the natives of Virginia:

> There was no towne . . . but that within a few dayes after our departure from every such Towne, the people began to die very fast, and many in short space, in some Townes about twentie, in some fourtie, and in one sixe score, which in trueth was very many in respect of their numbers. This happened in no place that we could learne, but where we had bin, . . . (Hakluyt, 1907, p. 191; cited by Lewis and Kneberg, 1946, p. 157).

Although the introduction of European diseases goes far to explain the marked increase in deaths among the juveniles and young adults, both of the Dallas and Clarksville people, there is still the problem of explaining the sex differential in the earlier populations. Unless one accepts the unlikely hypothesis that sexual differentiation was so slight in these populations as to lead independently to such strikingly similar errors in sexing, the sex distributions will have to stand as given. Snow's (1942, p. 448) suggestions of more careful burial of the males (and children) is inadequate, unless one is willing to assume the existence of separate cemeteries for the females outside the limits of the areas excavated, and that none of the archeologists concerned found these burial grounds.

The observed sex ratios in the earlier populations are obviously biologically abnormal, suggesting that some factor has intervened to alter them. The ratio of juveniles to adults is also suspiciously low. It would appear that at the Tollifero site, only 24 percent of the population died before 21 years of age. Comparable figures for rural Whites dying in 1924–26 are 28 percent; for rural Negroes, 32 percent; and for Mohave and Chemehuevi Indians, 49.2 percent (Clements, 1931, p. 401). How closely, it may be asked, do the *observed* distributions of ages at death, and sex, correspond to the *actual* distributions? Has the same factor which has modified the sex ratios in these populations also modified the ratio of juveniles to adults?

The Tollifero people, like other preagricultural groups, probably were hunters and gatherers. It is likely therefore that they were seminomadic, spending only part of their time at the site where the majority of their cultural and skeletal remains were found. If the whole group—men, women and children—moved together, some deaths surely occurred away from their home base. It is therefore possible that they would bury the less important of their dead along the trail, taking home for burial only those whom they considered of sufficient importance to justify this special effort. Since the men, the hunters, were the more productive members of the groups, while the women and children were principally consumers and burden bearers, one can surmise a number of reasons for abandoning the bodies of the latter, and taking back the bodies of the men. Or, it may be that more of the women and children died en route, leaving more of the men to die at or near the site. Either explanation could account for the predominance of men reported for these early sites; and at the same time confirm the suspicion that the observed proportion of juvenile deaths is unduly low. Multiplying the number of children and women by 2.5, the factor by which the men outnumber the women, we obtain an estimate of about 33 percent for the proportion of the Tollifero group dying before 21 years of age—an estimate agreeing much more reasonably with the percentages for Whites and Negroes cited previously. Although there is good reason to think that this revised estimate is closer to actuality than the observed percentage, there is, unfortunately, no way of checking its accuracy. Comparisons with series of similar culture are not likely to lead to more accurate estimates; and comparisons with groups of dissimilar cultures are suspect because other differences in living conditions may have altered both patterns of longevity and burial customs.

When one is confronted with a skeletal population in which the ratio of males to females deviates markedly from the normal 1:1 ratio, and where there is other evidence that the group may not have occupied the site the year round, it would be well to be cautious in drawing conclusions regarding health, longevity, and related matters. In other words, if a notable proportion of the expected females are not present, it is likely that the young, the sick, and the elderly may also be among the missing.

HEALTH AND DISEASE

Skeletal abnormalities appear considerably more frequently in the bones from the Clarksville site than in those from the Tollifero site. The preceding discussion of the skeletal remains suggests a number of reasons for this: (1) The difference in diet may have resulted in differences in general health, and therefore in susceptibility to illness, its course, and the probability of recovery. (2) The differences in population composition may imply cultural differences in the preservation of the bodies of the deceased; the abnormally high ratio of males to females in the Tollifero group suggests that the missing females, and perhaps also the sick, injured and elderly, may have been buried elsewhere. (3) The change from a hunting and gathering economy to a more settled way of life may have changed the likelihood of exposure to disease or injury and allowed the less fit to recover, or at least to live somewhat longer. The archeological evidence for difference in date and culture suggests other factors: New diseases may have appeared. Increases in population, made possible by the introduction of agriculture, may have led to more frequent contacts with other groups, both for the exchange of goods and of diseases. Finally there may have been changes in customs involving the treatment of the sick and injured.

Diagnosis is the first problem in dealing with skeletal abnormalities. If it is difficult for physicians to identify and deal with all of the pertinent factors influencing the condition of their living patients, it is infinitely more difficult for the anthropologist, dealing with much less complete information, and often with damaged or incomplete skeletons, to interpret the evidence accurately. Diagnosis must be based almost entirely upon the appearance of the bone—surface texture, shape, and structure as seen in cross section and X-ray. One must remember that the "pathology" seen may be in its initial stages, advanced, healing, or healed, and interpret it in the light of what is known about disease in general, the cultural evidence, and the state of preservation of the bones. In the case of Occaneechi skeletal remains, the state of the bones on examination made the evidence on pathology more than usually difficult to interpret: Fine sand in the medullary cavities introduced extraneous shadows and masked detail in the X-rays; while damage to the surface removed some of the evidence, and caused areas of lessened density that could have been misleading had not the bones been examined together with both lateral and anteroposterior radiographs.

The types of skeletal abnormality seen presented very little that was unusual; they include the more common anomalies, several fractures that had healed after infection and/or deformity, arthritides of various sorts, and a group of bones which showed what for the time will be called "inflammatory changes." Even this simple classification must be tentative. Some of the conditions now considered developmental variations of unknown causation may be found later to be of traumatic or pathogenic origin; some of the arthritides may be due to pathogenic causes rather than degenerative changes associated with aging; and some of the "inflammatory changes" may be sequelae of traumata, while others may have arisen from pathogens or metabolic aberrations. Apparent deformities may be due either to muscular stresses or to well-healed fractures.

Differences in the way of life at the two sites would lead us to expect differences in the incidence of degenerative changes; yet other cultural differences make the evidence nearly impossible to interpret. One would expect differences both in the incidence of arthritis, and in the sites of these degenerative changes; but the practice at Clarksville of scraping the bones has in many cases damaged the anterior surfaces of the cervical and lumbar vertebral bodies, removing much of the evidence of lipping or damage to the intervertebral disks. Because of the small size of the two series, comparisons of arthritic changes in other joints can lead to no useful conclusions as to differences in habitual muscular stresses. One can say only that while arthritic changes were observed in both populations, the increase at the Clarksville site by no means paralleled the marked increase in dental decay in that population.[11]

Since the Tollifero people followed a hunting and gathering economy, and were probably seminomadic, one would expect that fractures occurred more frequently than in the agricultural, and more sedentary, Clarksville people. Yet this very factor could influence the number of cases found, for an injured member of the group might be abandoned to care for himself as best he could, and his skeleton would not be among those found by the archeologist. Nevertheless, the Tollifero skeletons included one man whose fractured ankle had healed, albeit with deformity, and another individual whose humerus may have been fractured and healed. Of the fractures noted in the Clarksville skeltons—a thumb, wrist and hip—only the latter would have caused serious disability. From the nature of the osseous changes in this skeleton (USNM 380850), it is difficult to decide whether the trauma was a fracture or penetrating wound, or both, followed by inflammation and suppuration into the acetabulum. Four cases of separation of the lamina of the fifth lumbar vertebra (cf. Stewart, 1953) were noted, one at the Tollifero site (USNM 380901) and three at the Clarksville site (USNM 380856, –871, and –878). Again, the small size of the series and the few cases observed do not justify conjectures about differences in stresses causing these fractures.

Minor anomalies occurred at both sites, although somewhat more frequently at the Clarksville site. These included a child about 8 years old (USNM 380845) in which the posterior arch of the atlas was incomplete, and the anterior arch had failed to fuse in the midline, and whose 7th cervical vertebra bore a rib; a second child about 8 (USNM 380860), in which the anterior arch of the atlas was unfused in the midline; a man with a lumbar rib (USNM 380855); a man with a forked rib (USNM 380858), and a young woman (USNM 380856) with minor variants in the arterial canals of the cervical vertebrae. In contrast, only one infant (USNM 380918) at the Tollifero site showed a partially divided basioccipital bone. Other developmental aberrations, including accessory articulations, septal apertures of the humerus, and other minor variants appear in the skeletons of both series, but their frequency and sites suggest nothing particularly unusual. This apparent difference in the frequency of common anomalies may be due to the difference in the size and completeness of the population samples, so that conjectures about inbreeding, alteration in intrauterine environment, and survival of the less fit are not justified.

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[11] Sigerist (1951, p. 51), for example, refers to the current belief that "many cases of arthritis develop from a primary infectious focus, following a tonsillitis or a dental infection. . . ."

Only in the case of the "inflammatory changes" is the evidence clear as to differences. At the Tollifero site, there is one child (USNM 380890) whose long bones show inflammatory changes of some sort. The cortex of the tibiae and lower ends of the femora and one humerus are thickened and porous; and areas of porosity appear on other bones of the skeleton. The surfaces of the limb bones, particularly the tibiae, are rather porous; and the tibiae appear swollen and bowed. (The other bones of this skeleton, as noted previously, are badly damaged.) The tibiae of a few of the older adults seem somewhat denser and smoother than usual; and vascular indentations appear on the posterior shafts of one or two. It is impossible to say whether these are simply normal variations, normal age changes, or residual evidence of long-healed inflammation.

Although only one of the Tollifero skeletons shows unmistakable evidence of "inflammatory changes," such changes appear much more frequently in the Clarksville long bones. Upon examination, these appear to fall into at least four distinct categories. The first type consists simply of increased vascularity of the surface of the shaft, usually on the tibia; the form of the shaft is normal, and the X-rays show no changes in the density or thickness of the cortex, or in the medullary cavity. A second category includes two cases of obvious infection. In one (USNM 380856), a fractured wrist had become infected, and in healing had left a fistula; but the infection seems not to have spread. In the other (USNM 380883), the focus of infection seems to have been on one of the tibiae which shows signs of suppuration, and uneven bone reaction; and the infection seems to have spread to other bones of the skeleton. This latter was tentatively diagnosed as osteomyelitis by two pathologists who examined both the bones and the radiographs. The third type consists of localized swellings on the bones, again usually on the tibia, but occasionally on other bones. These swellings, which usually occur on only a single bone, appear radiographically as ellipsoidal zōnes of decreased density seeming to have originated on the surface of the bone, and occasionally extending to the medullary cavity. Occasionally a superficial area of slightly increased density, possibly of periosteal origin, appears to overlay the cortical bone. These areas of decreased density are usually quite distinct from the normal cortical bone; their surfaces are usually covered with fairly fine vascular lines, running parallel to the long axis of the bone. Except for the immediate vicinity of the swelling, the bone—and the remainder of the skeleton—appears normal in texture, shape, and density. In the fourth type, considerably larger areas of bone are involved, and the changes are more obvious. The bones most frequently affected are the tibiae, the lower ends of the femora, and the distal ends of the radii and ulnae, and usually both right and left limbs are affected equally. The whole tibial shaft appears swollen and bowed, and seems unusually light in weight. Radiologically, the bone appears to be of uniformly decreased density, but of increased thickness; the width of the medullary cavity is about as in normal bone. Broken surfaces of the bone appear porous, as if the Haversian canals had been enlarged in diameter; and the surface of the bone generally appears to be smooth but covered with fine pits or lines. Except for sites of muscular attachment, there are no roughened areas, nor are there signs of periostitis, fistulae, or other indications of infection.

In each of these categories except the first, one finds various degrees of inflammation from mild to severe, and slight textural differences suggesting stages of involvement from early to nearly healed. This in itself suggests that types 2, 3, and 4, represent distinct entities, unrelated to each other. The first category is the most difficult to interpret. It may represent simply a normal variation; or a relatively minor injury, such as a severe bruise, which irritated the periosteum, resulting in a temporary increase in blood supply, but which would normally heal without further complication; or it might be an early stage of one of the other types. The second type, the obvious infections, are relatively easy to identify by localized, but somewhat uneven, bone reaction, evidence of suppuration, and limited skeletal involvement. Only if infection spread systemically to other bones would there be any possibility of confusing these injuries with inflammatory changes of other origin; such cases would have to be evaluated on the basis of additional evidence.

The third type, the localized ellipsoidal swellings, seem to represent reactions to injuries, because they are circumscribed in area and appear to have originated on the surface of the bone. Their location in the skeleton supports this interpretation: They appear only on the long bones, and occasionally on the face. The majority appear in the tibia, particularly on the anterior and medial surfaces of this bone;

the next most frequently affected sites are the bones of the forearm.[12] Both of these sites are relatively unprotected by muscle and fat, and both are exposed. The tibia especially is likely to be injured—by bruises from falls or kicks, chronic abrasion from kneeling on rough ground, scratches from bushes and undergrowth, and similar everyday accidents. Multiple lesions, either in single bones or several bones within the skeleton, are not incompatible with the possibility of their traumatic origin.

The fourth type of "inflammatory change" presents a fairly uniform pattern as to alterations in bone thickness, weight, density, and texture, the bones affected, and the apparent lack of any focus of infection. The total picture is one of a systemic affection, probably more or less chronic, rather than acute infection. The pathologists who examined the bones and radiographs were of the opinion that this type of bony change may be due to nutritional deficiencies, possibly in calcium or protein, which alter microscopic bone structure, the structurally weakened tibiae becoming bowed, rather than breaking under the weight of the body. The high frequency of this "new" (? deficiency) disease at the Clarksville site, and its single appearance at the Tollifero site could be associated with the changes in diet which produced the striking differences in tooth wear. Nevertheless, unless these bony changes can be identified with a particular nutritional deficiency, and the latter can be shown to be probable in these sites, the diagnosis must remain tentative.

In general, the Tollifero population seems to have enjoyed somewhat better health than the Clarksville population. As suggested earlier, part of this impression may be due to elimination of some of the less fit by selective burial; but one would not expect their total elimination. Thus it is safe to conclude that disease affecting the bones was somewhat more common at the Clarksville site than at the earlier Tollifero site. Nevertheless, the range of disabilities seems to have been limited to an occasional developmental variation, an infected wound, traumata of varying severity, and possibly, malnutrition. The "swollen, bowed tibia syndrome" does not seem to show any clear correlation with the age or sex of the affected persons, although it appears primarily in adults. Other diseases which did not affect the bones presumably existed, but of these there is no evidence. Similarly, there is no evidence of the presence of other diseases which *do* affect the bones: For example, the radiographs gave no indication of the increased density typical of syphilis, or of the mosaic structure seen in osteitis deformans,[13] suggesting that neither of these conditions was present. The one instance of possible collapse of the bodies of the lumbar vertebrae occurred in an old female (USNM 380903) ; the other bones of this skeleton are light and demineralized, but there is no reason for attributing this to tuberculosis of the bone.

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[12] Goldstein (1957) noted that "inflammatory lesions" of Texas Indians were nearly 6 times as frequent in the tibiae as in other bones. His "inflammatory lesions" include both localized and generalized swellings, of all degrees of severity.

Cranial pathology was uncommon at both sites. In one child from each site (USNM 380890, –873), the cranial lesions seem to be associated with inflammatory changes elsewhere in the skeleton. The skull of one Tollifero man (USNM 380917) showed perforations of unknown origin; while a healed lesion on the right coronal suture of one of the Clarksville men (USNM 380844) may have been associated with the accident in which his thumb was fractured. The skulls of two Clarksville children about 12 years old (USNM 380860, –862) show cribra orbitalia, honeycomblike patches on the roofs of the orbits, usually considered early stages of osteoporosis symmetrica. Although this condition is familiar to anthropologists, its etiology is as yet unknown; but causes ranging from malnutrition to congenital blood dyscrasias have been suggested (cf. Hooton, 1930, p. 316 ff.). The orbital lesions in these children are small; the rest of the skull and skeleton of USNM 380862 appears normal; and X-rays of the long bones show neither lines of arrested growth nor other abnormalities. The bones of USNM 380860 are thickened and bowed.

The writings of the early explorers are not detailed enough to be helpful in identifying the aboriginal diseases of the Southeastern Indians. There are references to "fluxes," "agues," "distempers" and pains in joints and limbs caused by "humours," which were treated by sweating, drinking bark infusions, applying poultices, sucking and scarifying. In describing scarifying, which seems to have been a popular practice, Beverley (1947, p. 217) says: "They seldom cut deeper than the Epidermis, by which means they give passage to those sharp waterish Humours, that lye between the two Skins, and cause Inflamations. . . ." Perhaps such treatments may have been beneficial, but they raise the possbility that some of the pathology seen may have been, in a sense, iatrogenic. Aside from the descriptions of medical practices, most of the evidence is negative, consisting of lists of diseases which the people did not have. For example, Lawson, writing in 1714 about the Carolina Indians, says:

> They are never troubled with the scurvey, dropsy, nor stone. The phthisic, asthma, and diabetes, they are wholly strangers to. Neither do I remember I

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[13] In osteitis deformans, the bones also become thickened, softened, and bent; but the process may affect *any* of the bones of the skeleton, and the erratic pattern of demineralization and new bone formation bears no resemblance to the uniform demineralization seen in the X-rays of these bones.

> ever saw one paralytic amongest them. The gout, I cannot be certain whether they know what it is, or not. Indeed, I never saw any nodes or swellings which attend the gout in Europe; yet they have a sort of rheumatism or burning of the limbs, which tortures them grievously, at which time their legs are so hot, that they employ the young people continually to pour water down them. . . . [Swanton, 1946, p. 789.]

It is tempting to equate this "rheumatism" with the swollen, bowed tibiae described above, but the necessary evidence is lacking. Indeed, the necessary evidence is lacking for identifying any of the pathological changes seen in the bones, with the exception of obvious fractures. At present, all that the anthropologist can do is to describe as accurately as possible the abnormalities he sees in the skeletons he is working with, adding whatever cultural data seems pertinent, bearing in mind that in other skeletal populations apparently similar abnormalities may be due to other causes. Eventually, with sufficiently detailed descriptions, comparisons with clinical reports may make differential diagnosis possible.

EVIDENCE IN THE SKELETAL REMAINS FOR CULTURAL PRACTICES

CRANIAL DEFORMITY

Although a few of the Tollifero and Clarksville crania show slight lambdoid deformity, the absence of severer deformity deserves attention. As Stewart (1940) notes, earlier cranial series in the southeast are usually undeformed, although there is evidence for deformity in the central and northeastern Hopewellian and Adena peoples. The spread of deformity into this area is rather late, but by the time horizon represented by the Peachtree site (Stewart, 1941) and the Moundville site it is rather common. The few instances of slight deformity seen in the series described here, it should be noted, resembled in type those shown by Stewart. Only one of the Clarksville skulls suggests more severe deformity. The evidence of this one skull, however, is not too clear, for the specimen consisted only of a partial face with an usually vertical frontal bone; the remainder of the skull was warped and too fragmentary for restoration. If deformity was present, it was neither frequent nor severe.

SCALPING

Three of the Clarksville crania show long, shallow grooves on the frontal and parietal bones suggesting that the scalp had been removed about the time of death. Two of these crania were those of men (USNM 380850 and 380865), the other that of a young woman (USNM 380856). These cuts, shown in plates 102, *lower*, and 103, cross the frontal bones, roughly midway between the hairline and the browridges, are interrupted, and resume their course on the parietals above and behind the ears. Cuts, similar in position, depth and width, but continuing almost completely around the scalp area are to be seen in the skull of a girl 16–18 years old from South Dakota (site 39SL4, USNM 381356). In none of these four cases is there any sign of inflammatory reaction, such as would have been present if the persons had survived for even the few days required for inflammatory changes to begin (Stewart, 1956; Hamperl and Laughlin, 1959).[14] This would suggest that the persons had been scalped either just before or shortly after death. Marks elsewhere on the skeleton indicate that the three persons from the Clarksville site were given the usual mortuary treatment, to be described later, and then buried in the customary pits. With one of the men (USNM 380850) there were four disk-shaped shell beads; with the woman (USNM 380856) there was the body of a child and a turtle carapace; and immediately above the other man (USNM 380865) there were a number of unidentifiable burned clay objects.

The evidence that these persons who were scalped received at least the minimum mortuary rites accorded the other individuals whose remains were buried at the Clarksville site poses a problem: Either, for some reason, the Clarksvillers scalped their own people, or they accorded proper burial to enemies brought to the site, who were scalped and killed there. From the writings of early visitors to the Southeastern United States, summarized by Swanton (1946, pp. 686–701), one gets the impression that scalping was associated almost entirely with warfare. Scalps seem to have been valued trophies of valor, and to have been taken both from those killed in combat and from captives brought back to the village for torture, who were killed and scalped there. The scalps of women and children were particularly prized, as evidence that the takers had penetrated beyond the line of combat into the enemy village. DeBry's pictures, accompanying LeMoyne's account of the Florida Indians (Lorant, 1946), show the taking of the scalps and other trophies on the battlefield (picture 15), and the ceremonial in the village afterward (picture 16), when these were hung on poles and cursed by the sorcerer, presumably to bring further bad luck to the enemy.

Friederici (1907), in summarizing the evidence on scalping in America, assumes that the scalp was a substitute for taking the whole head, and a trophy of high importance. In some areas, the dead were dug up to obtain the scalps. If it were impossible to save a friend from the enemy or to carry away his body, then the scalp at least was taken to safety. In rare cases only was a member of a tribe scalped by another member of the same tribe for other reasons; Indians executed by their own people were never scalped. Otherwise only enemies were scalped.

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[14] In addition to summarizing the literature on this custom, Hamperl and Laughlin (1959) describe a protohistoric Arikara skull in which healing had taken place.

The evidence from the literature does little to elucidate the problem presented by these three crania. Since the burial procedures probably took some time, it is difficult to picture the Clarksville people expending the necessary effort on slain enemies. There is no particular reason to believe that the bodies were dug up to obtain the scalps. Again, since preparing the body for burial probably took several days, it is difficult to reconcile this with the emergency removal of their friends' scalps to a place of safety unless the Clarksville people reburied them on their return to the site shortly afterward. Finally, there is the possibility that these cases do not represent scalping (that is, the removal of the scalp as a trophy) but were made during the usual mortuary procedures. Nevertheless, since the other skulls from which the flesh was removed do not show such cuts, it is possible that in these cases special care was taken to insure proper removal and preservation of the scalp.

If, as the evidence suggests, these three persons were scalped, their presence at the Clarksville site throws light upon another problem. Friederici (1907) argued that the custom came from the Old World and spread rapidly over North America after the Europeans introduced bullets for killing, and knives for scalping, and started the practice of paying premiums for scalps. Others believe that the Whites acquired this custom from the Indians. These three skulls, from a site which, although late, shows no evidence of European contact, are additional evidence for the pre-Columbian presence of the custom, standing along side the Middle Mississippi skull from Illinois described by Neumann (1940) and the Moundville, Alabama, skull described by Snow (1941).

BURIAL PRACTICES

During the examination of the first skeleton, burial 1 from the Tollifero site (USNM 380890), a number of irregular pits, about a centimeter in diameter and a few millimeters deep, were seen on both the inner and outer tables of the cranial bones (pl. 104). At first, it seemed that these might be vascular impressions, possibly associated with pathological changes elsewhere in the skeleton. When similar markings (pls. 106–110) were noted on the long bones of other skeletons, this interpretation was discarded, both because of differences in detail and because such vascular markings do not occur on the long bones. Animal toothmarks were then considered, but according to mammalogists, the width, depth, position and direction of the scratches rule out this possibility. According to ornithologists, bird beaks do not leave such marks on the bone. Malacologists ruled out snails; and fish, reptiles, amphibians and insects seem unlikely agents. Damage by human agency is, therefore, the only possibility remaining. Chance damage, during excavation, seemed unlikely for several reasons: The grooves, less than a millimeter wide, are too deep, narrow and short to have been made by anything but the point of a knife; they are usually multiple, crisscrossing each other; occasionally penetrating the bone, but rarely resulting in a break; and they appear most frequently on the shafts of the larger limb bones, rather than at random. In short, they are not the sort of marks left by an archeologist's tools. Fortunately the bones had not been cleaned very carefully in the laboratory, and dirt still filling the holes and scratches confirmed the impression, given by soil staining elsewhere, that the cuts were old.

These incised markings appeared sporadically on the long bones of about one-third of the preserved skeletons from the Tollifero site. They were usually shallow, small, and infrequent—one, two, or three on a single bone, and usually on only the shafts of the larger bones of the skeleton. Occasionally they would appear on the pelvic side of one of the innominates, and, as in the case which attracted attention to this phenomenon, they were found on the inner surface of the skull. All of this suggested the bones had been marked before burial.

In the examination of the Clarksville skeletons, similar markings were seen on the bones. Yet there was a clear difference, for these markings were deeper, many more were found on each bone, many more bones, including hand and foot bones (pl. 108) in each body, were so marked, and virtually every skeleton in the collection had been treated in this fashion. In addition, new phenomena, almost certainly associated with these pits, appeared. In addition to the pits already described, there were short, shiny, parallel scratches of the sort made by repeated hacking with a knife blade; deeper pits which perforated to the marrow (pl. 106, *c*, *d*, *e*); rounded indentations, often ending in shallow, meandering grooves, apparently gouged by a blunt point (pl. 109, *a*); and denuded streaks 2 cm. or more wide, which look as if the periosteum had been pulled off, taking with it some of the underlying bony surface (pl. 109, *b*, *c*). Finally, there were patterns of damage to the articulated skeleton that could only be interpreted as signs of cutting off strips of flesh, taking the underlying bone as well (pls. 109, *c*, *d;* 110). Had the latter skeletons been among the first examined, the surface damage just described would undoubtedly have been dismissed without further thought, or attributed to weathering or careless handling.[15] Seen, providentially, after a series of skeletons showing progressively severe and extensive markings, they seem, rather, to represent an advanced stage in the development of this cultural practice. Examination of the bone itself confirms this impression. A decayed or weathered bone is usually crumbly and flaky throughout, with the cancellous bone of the epiphyses so mushy when found that it rarely survives excavation. Except for the denuded surfaces, which are rather fibrous, the shafts and epiphyses of these bones are firm and hard, and the undenuded surfaces show no tendency to flaking. Although removing the surface of the bone may have left the underlying bone more susceptible to weathering than an undamaged bone, it is not likely that soil conditions alone could have produced such a regular mosaic of surface changes. Furthermore, it is most unlikely that almost exactly the same sites would have been affected, to such similar degree, in so many skeletons. Similarly, the more extensive damage cannot be blamed on careless excavation, or disturbance by the bulldozing that preceded archeological work. Mc14–39 (USNM 380868) is a good case in point. This female skeleton lay extended on its back. The arm and leg bones are in poor condition, but the significant damage is to the back. The first four pairs of ribs, covered in life by the scapulae, are intact; but the fifth through tenth pairs show surface defects adjacent to the spine, and the eleventh and twelfth ribs are missing. The spines of the first six thoracic vertebrae have been cut off, as were the spines and transverse processes of the next four thoracic vertebrae (cf. pl. 110). Of the remainder of the spine, the last two thoracic vertebrae and the entire lumbar segment of the spine are represented by only centra and neural arches, the posterior, lateral, and anterior surfaces having been removed entirely. The pattern of damage continues onto the posterior surfaces of the iliac blades and the lower portion of the sacrum, continuing anteriorly onto the ischia and lower pubic symphysis. The dorsum and sides (but not the soles) of the feet and one of the hands show similar damage. Only the proximal phalanges of the great toes remain, suggesting that the distal parts of the feet had been removed. There is no trace of the other 26 phalanges of the toes, or of the missing parts of the vertebrae, as one would expect if the bone had simply been damaged in excavation. Additional evidence that the damage did not occur during excavation is seen in the grave goods that accompanied this individual. In Miller's description of this burial (p. 211), he notes the presence of a saucer-shaped *Busycon* gorget, wristbands of shell beads, two necklaces of shell beads, and shell disks. The most reasonable interpretation of this pattern of damage is that it occurred when the flesh was stripped from a relatively fresh cadaver, and that the remains, still articulated by ligaments, were subsequently buried. The skin may or may not have been replaced, but it appears that the shell ornaments were put back in their customary positions on the arms and neck.

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[15] This is undoubtedly why Stewart (1941) took no particular notice of the "punch-and-gouge" surface damage which occurs on some of the long bones from the Peachtree site in Cherokee County, North Carolina. A spot check of these bones, from an area formerly occupied by the Cherokee, shows gouges on some of the long bones of USNM 369571. A spot check of a collection from Glynn County, Georgia, on the coast, shows various of the patterns on long bones from skeletons 378961, 378963, and skulls 379026 and 379045. A fuller examination of these and other East Coast collections would probably reveal other skeletal remains with these markings.

The burial treatment of the body, as inferred from the Clarksville skeletons, may be outlined as follows: The skin may have been removed. Then the corpses were eviscerated, probably by cutting through the chest and abdominal wall, and the thoracic and pelvic cavities then cleaned, probably by picking at bits of adherent flesh with knife points. Evidence for this is seen in the sagittal cuts on the sternum, and the scratches and gouges found occasionally on the inner surface of the rib cage and pelvic canal. To remove the flesh from the limbs and trunk, there seems to have been a variable amount of hacking, which cut through the flesh to the bone; gouging, which occasionally penetrated to the marrow cavity; stripping, in which the removal of the flesh and periosteum appears to have pulled off the surface of the bone also; and scraping or cutting off chunks of flesh, taking off any underlying bone in the way of the scraper. The skull and face, and the outer and inner margins of the mandible show these marks. The hands and feet were stripped, leaving marks on the dorsal, ventral, medial and lateral surfaces of the bones. Most of the finger bones remain, but the smaller of the toe bones appear to have been lost when the skin of the foot was removed. The ankles, and especially the heels, seem to have received special treatment: Many of the calcanei have been cut nearly in half longitudinally, and holes 2 or 3 centimeters in diameter have been bored through them. Occasionally the adjacent tarsal bones show similar holes.

Both adults and children seem to have received the full treatment, but small infants show less damage. Even so, their long bones are usually marked. Whether this was because of their lesser importance in the community, or whether their smaller size made the treatment more difficult, or less necessary, can only be guessed. The severity of the marking suggests that the cadavers were relatively fresh when this work was done, for while advanced decay would probably have made the flesh easier to remove, it might have made it more difficult to separate the skin. The remaining skeletons, still held together by ligaments, were then buried, usually semiflexed or extended, in individual pits. Whether the skeleton had any sort of covering is hard to say; but in some cases, at least the jewelry was put back on the arms and neck. Judging from Miller's field sketches, less than 10 of the skeletons were flexed tightly enough to suggest that the bodies had been folded and wrapped into packages. Of the 17 extended burials, all but two were infants, or small children, or from a lower stratum. The remainder of the skeletons, nearly 60 percent of the population, lay semiflexed, the legs and arms too far from the trunk to have been wrapped in the fashion described above.

The evidence for burial customs at the Tollifero site is much harder to interpret. For example, only one-third of the skeletons saved showed these marks; and they are shallower, and fewer in number. Of the dozen adults and children that show these marks, five were found semiflexed, three were tightly flexed, two were reburials, one was extended, and the position of the twelfth is unknown because the rest of the body had been destroyed. The unmarked bones, however, come from both primary and secondary burials, and include infants. The relatively small number of individuals showing these marks may indicate that the procedure was reserved for persons of special significance; or that the custom was just being introduced or, perhaps, abandoned. The infrequency and shallowness of the marks may mean either that the attempts at removing the flesh were halfhearted; or, in the case of the reburials, that the flesh had decayed to the point where it was easily removed. If the latter, the question arises as to whether the bodies had been exposed on scaffolds for a fairly long time, or whether some bodies were buried and latter exhumed for this treatment, other bodies being left in the ground. The age, sex, and burial position of the skeletons, both marked and unmarked, show no particular pattern, possibly because of the rather limited number of skeletons available for observation. The associated artifacts occur slightly more frequently with the marked skeletons, but were also found with unmarked skeletons. In only one case is the evidence readily interpreted: The presence of a necklace of canine teeth with Ha6–9 (USNM 380897), a semiflexed female skeleton with markings on most of the long bones, suggests the replacement of at least the ornaments before burial.

Burial practices reminiscent of those inferred from the markings on the bones, were attributed to the Southeastern Indians, by early writers. In 1585 John White sketched a burial house, noting on his drawing that—

> The Tombe of their Cherounes or cheife personages, their flesh clene taken of from the bones saue the skynn and heare of their heads which flesh is dried and enfolded in matts laide at their feet, their bones also being made dry or couered wth deare skynns not altering their forme or proportion . . . [Lorant, 1946, n. p.]

To the DeBry adaptation of this drawing, Hariot adds the following description:

> They build a Scaffolde 9. or 10. foot high as is expressed in this figure vnder the tombs of their Weroans, or cheefe lordes which they cover with matts, and lai the dead corpses of their weroans theruppon in manner following. First the bowells are taken forthe. Then layinge down the skinne, they cutt all the flesh cleane from the bones, which they drye in the sun and well dryed they inclose in Matts, and place at their feete. Then their bones (remaininge still fastened together with the ligaments whole and vncorrupted) are couered agayne with leather, and their carcase fashioned as yf their flesh wear not taken away. They lapp eache corps in his own skinne after the same is thus handled, and lay yt in his order by the corpses of the other cheef lordes. . . . [in Swanton, 1946, p. 719.]

A variant of this procedure was used among the Choctaw in the 1760's:

> The corpse was first laid on a scaffold near the house along with food and property, the skull being painted red. . . . A small bark fire was lighted under the scaffold 4 days in succession. . . . After the flesh was thought to be sufficiently decayed, the bone picker or "buzzard man" of that particular canton appointed a day, and in the presence of the mourners, who meanwhile sang lugubrious songs, he removed the flesh from the bones and restored the latter to the family, who put them into a chest made of bones and splints or a hamper and took it in procession to the cantonal mortuary house. . . . Some writers say the flesh was buried and some that it was burned—according to one, along with the scaffold on which it rested. . . . After the charnel house had become pretty well filled with boxes of bones, a final disposition was made of them. . . . [Swanton, 1946, pp. 725–726.]

Elsewhere in the Southeast, the bodies of chiefs were buried for about a year, then exhumed for the removal of the remaining flesh (Swanton, 1946, p. 729).

Davidson (1935), summarizing early writings on the burial customs of the Indians of the Delmarva peninsula, describes similar customs, all involving the cleaning of the bones. In Virginia,[16] the bodies of prominent individuals, at least, were disemboweled, the skin slit up the back and removed, the flesh cut from the bones by priest-officials and dried, the skin replaced and packed with sand to enclose the skeleton. These "mummies" were placed in a mortuary temple, such as White illustrates (Lorant, 1946), and eventually found their way to ossuaries. It would seem that this procedure was carried out not very long after death. A variant of this custom, attributed to the Lenape around Chester, Pennsylvania, was described by Lindstrom in 1654. After temporary burial for about a month, the body was exhumed, and each person present took a knife and proceeded to cut the flesh from the bones. Some two hundred years later, the Lenape custom had changed slightly. Temporary burial was omitted, and

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[16] After Hariot (1585), Smith (1608), and Strachey (1612), given in bibliography of Davidson (1935).

"when a member of the Wolf Clan died, the flesh was scraped from the bones and buried, and the bones allowed to dry for 12 days. At the end of this period the skeleton was wrapped in white buckskin and carried to the place where the Human Skeleton dance was held." [17]

Unfortunately, it has not been possible to consult the original reports cited by Davidson to determine whether additional details are given. It would be useful to know whether the flesh of the exhumed bodies was sufficiently decomposed to be removed easily (with fewer knife marks), or whether considerable hacking was required; whether the body was intact at the beginning of the cleaning; dismembered for more convenient handling; still held together as a skeleton by ligaments even at the conclusion of the cleaning, or simply a bundle of bones, with some limbs still partially articulated. One would like to know, too, how clean these bones were gotten; not very clean, one would suspect, from the records of "the 'disagreeable stench' which trailed the [Nanticoke] groups who carried these remains through the town of Bethlehem between 1750 and 1760" (Davidson, 1935, p. 87). One wonders, too, how long the remains were kept before eventual burial. One also wonders why.

From the foregoing, it would appear that the removal of the flesh from the bones was a widespread practice in the Southeast and Middle Atlantic coast; that the practice continued from at least before the earliest reports in the 1500's to the latest in the 1800's; and that there were local variants. The marking of the Tollifero bones indicates considerable antiquity for the practice in the area. In some places the flesh was removed from the bones a few days after death; elsewhere the bodies were buried for varying lengths of time, exhumed and then cleaned. In some areas, the cleaned bones were replaced in the skin, covered with sand to reproduce the living contours, and laid in a death house; elsewhere they were folded and wrapped neatly into packages, kept for a while and then buried. With some groups, removal of the flesh was work for professionals; in others, a community project. The disposal of the flesh; the clan, status, or relationship of the individuals accorded this treatment; the motives and probably other aspects of the procedure varied also from place to place, with time and with circumstances.

One of the important variants is probably the reason for the practice. Part of the evidence may be read from the position in which the bones were found, part from the bones themselves, and part from the historical record.

The first problem is to establish the existence of the practice. Only with a bundle burial is the position of the bones clear evidence of secondary burial of some sort; a flexed burial where the limbs are so close to the trunk as to suggest that the individual had very little—

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[17] Adams (1890), cited by Davidson (1935, p. 89).

if any—flesh, is fairly good evidence; but not all of these showed markings on the bones, indicating cleaning. With semiflexed or extended burials, markings on the bones must establish whether the flesh was removed before or after interment. One may surmise that a semiflexed skeleton, showing signs of cleaning, had been buried within a relatively short time after treatment, for the position of the skeleton suggests the absence of any wrappings other than, possibly, the skin. Conversely, one would expect unwrapped skeletons to be buried semiflexed rather than extended. A mummified extended skeleton, with the bones held in place by dried skin and sand packing, however, would be difficult to bend; and bones held in place in this way would be articulated when buried, even after the ligaments had decomposed.

The second problem is to establish the reason for the practice. From the literature summarized by Davidson (1935) and Swanton (1946), one gathers that (1) mummification of bodies of chiefs or other important personages was practiced in some areas; (2) bones of other persons were also cleaned and kept; and (3) that the cleaned bones were occasionally carried about from place to place as the group moved. Reasons for keeping bodies vary somewhat. A group may wish to preserve the remains of a person of importance for veneration, good luck, or some other reason. Sentiment, religious beliefs, or other considerations may have motivated families to keep the remains of deceased members with them. If the group were sedentary, it would be easy to do this by burial under the house, or in some other designated place; but if the group moved about periodically, the only solution would be to take the remains with them. Regardless of whether one is moving or sedentary, even partially cleaned bones are decidedly less smelly and messy than a decomposing body—a factor readily appreciated by anyone familiar with the summer temperatures and humidity of the Middle and South Atlantic States. One may surmise, further, that circumstances might modify the practices. Under normal conditions, the group would be able to carry out regular procedures; but a rapidly moving group might be forced to omit some of the operations, or to bury the bones in temporary ossuaries, as the Nanticoke apparently did in the 1760's (cf. Davidson, 1935, ftn. p. 87).

Reviewing the burial practices seen in the Tollifero and Clarksville sites in the light of these surmises, various suggestions can be advanced. At the Tollifero site about one-third of the skeletons show evidence of the flesh having been removed from the bones. It might be inferred that most of the bodies were simply buried; that the extended burial showing these markings had been mummified as described above; that the bundle and tightly flexed burials had been cleaned (possibly after exhumation or exposure), wrapped and kept for a while, and that the semiflexed burials had been cleaned and buried while fresh. As will be noted later, most of the Tollifero bundle burials were found with other skeletons. There is no indication, from the grave goods or from other evidence, as to why these persons should have received the treatment they did.

The evidence at the Clarksville site leads to somewhat different conclusions. Apparently the cleaning of bones was by this time the regular procedure, since virtually all of the burials showed markings. It would appear that the skeletons had been buried shortly after the bones had been cleaned, and that, therefore, there had been no attempt to keep the remains for any length of time. One can only speculate as to whether this was the remnant of a former custom, the practical purpose of which had been forgotten; or whether changed conditions at the site rendered the survivors unwilling, or unable, to do more than prepare the bodies in the customary manner and bury them.

CANNIBALISM(?)

One possible reason for removing the flesh from the bones is cannibalism. There is both positive and negative evidence for this practice in the bones from these two sites.

In three of the Tollifero burials, the bones were found broken and piled in a heap. The bones of one of these individuals, an adult male, were discarded in the laboratory, so that reexamination is not possible. The other two individuals were a child about 12 (USNM 380890) and an infant less than a year old (USNM 380896). In the former, the pattern of damage to the bones (pl. 105) suggests deliberate breakage to remove the marrow. The skull, too, was broken before burial, as indicated by the knife marks on the inside of the skull (pl. 104), probably to remove the brain. These seem to have been the only individuals treated in this fashion, for the remaining secondary burials were bundle burials interred with recently deceased persons. Some of the other burials, of course, bear knifemarks on the bones, but such evidence is far less conclusive than the evidence from the broken bones.

At the Clarksville site, a number of the bones show small holes, about a centimeter in diameter, which had been bored through the cortex (pl. 106), possibly to allow one to suck out the liquid marrow. Here again this is the only direct evidence in the matter.

That the flesh was removed from the bones seems quite clear. Cannibalism, however, does not seem an adequate explanation for most of the cases. The motives for cannibalism are generally either ritual or to obtain food in severe famine. Ritual cannibalism, however, is quite selective: Only certain individuals are accorded this dubious honor, only certain parts of the body are consumed, and only selected individuals participate in the meal. To meet these conditions, it would seem unnecessary to remove so much flesh from so many bodies, and to bury the remaining skeletons, still articulated with ligaments, with so much care. Food is the other alternative, but this seems equally unlikely. Again, it must be emphasized that there are no signs of butchering, such as those seen in animal bones (White, 1955), in which the ends of the bones are cut or chewed off, and the bones split. Unless hunger were severe one would not bother with the small amount of meat which could be obtained from the hands and feet, but would restrict consumption to the more readily obtained flesh of the arms, legs, and trunk. If hunger had been severe, the cleaned bones would probably have been cooked and gnawed to obtain the last remaining bits. If this had happened—unless the bodies were boiled, cartoon-cannibal style, in very large pots—the limbs would have had to be disarticulated, and the remaining portions could not have been redressed in their ornaments and laid out in anatomical order for burial. All things considered, although there is some evidence that in a few cases the marrow was removed from the bones, there does not seem enough evidence to conclude that cannibalism was a widespread practice at either site. What happened to the flesh that was removed, of course, can only be a matter of conjecture; it may have been eaten, or it may have been disposed of in one of the ways described in the literature for other groups.

MULTIPLE AND SECONDARY BURIALS

Both multiple and secondary burials were found at the Tollifero and Clarksville sites, but a consideration of the age and sex of those buried together, and the condition of the remains when interred, shows clear differences.

At the Tollifero site, there were four instances of two or more persons being buried together in the same pit.[18] These were as follows:

1. The primary burial of an infant (Ha6–5) with the bundle burial of an adult male (Ha6–4).
2. The primary burial of a woman over 35 (Ha6–16) with the bundle burial of a woman about 21 (Ha6–17).
3. The primary burial of an infant (Ha6–38) with the bundle burials of an adult male (Ha6–37) and a child about 10 years old (Ha6–36).
4. The primary burial of an infant (Ha6–42) with the bundle burial of an adult male (Ha6–41).

The other secondary burials were an adolescent (USNM 380890) and an infant (USNM 380896). The bones of these were found broken, piled in a heap and buried in individual pits. All of the other burials, including the other two infants, were primary, single burials. It is noteworthy that all of the multiple burials consisted of the primary burial of a recently deceased person, usually an infant, with the secondary burial of a previously deceased person, usually an adult male. It is also noteworthy that 5 of the 7 (or 8?) "reburials" went into these multiple graves. There would seem to be two types of "reburial" at this site. The condition of the bones of the infant and adolescent buried individually suggest deliberate breakage, possibly to obtain the marrow. Perhaps these might better be described as slightly delayed primary burials, reserving the term "secondary burial" or "reburial" for bodies given the customary mortuary rites, with or without inhumation, and later buried. Unfortuately, it is impossible to estimate the time elapsing between death and inhumation in the case of the bundled skeletons; but a minimum of 2 years seems reasonable. In the case of the infant-adult male combinations, one might speculate that there was some difficulty about widows remarrying, so that the firstborn child of a second marriage was killed and buried with the remains of the former husband (and children?) to quiet his ghost—a hypothesis which would be plausible if it could be proved that the infants were newborn instead of several months old. But this would not account for the burial of the two women, the younger of whom predeceased the older. There is no way of establishing the relationship of any of these persons to each other, and there is nothing in the literature throwing any light on these practices. Therefore, any interpretation at present must be purely speculative.

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[18] In the case of burials 10 ff. and 14 ff. it is not possible to tell from the available information whether these were in single pits, or merely adjacent to each other; most of the bones were discarded, so that no analysis is possible. Ha6–7, a bundle burial of an adult male, may have had parts of another skeleton admixed, but only a mandible was saved.

The multiple burials at the Clarksville site present a completely different picture. They are as follows:

1. The semiflexed skeletons of an adult male (Mc14–4) and a child about 8 (Mc14–5).
2. The semiflexed skeletons of two adults, one (Mc14–9) probably a young female, the other (Mc14–10) too fragmentary for age and sex determination.
3. The semiflexed skeleton of a young adult female (Mc14–22) and the extended skeleton of an infant about 18 months old (Mc14–23).
4. A multiple burial, including the bundle burial of a young adult male (Mc14–25), a child about 8 (Mc14–26), an adult (Mc14–27), and an infant; 26 and 27 may also have been bundle burials, since the excavator at first thought this a single burial.
5. The semiflexed skeleton of an adult male (Mc14–40) and the extended skeleton of a very young infant (Mc14–41).

The multiple burial, Mc14–25, –26, –27, including the only bundle burial(s) at the Clarksville site, seems reminiscent of the practice described at the Tollifero site. In the other instances, it would seem that these persons had died at about the same time, and were buried together, possibly because of some relationship. (Simultaneous burial is probable since neither the skeletons nor the burial pit seems to have been disturbed after the interment.) Unfortunately the skeletal remains give no evidence as to the cause of death.

INTERPRETING EVIDENCE ON BURIAL PRACTICES FROM THE BONES

Usually about all that the archeologist expects of the physical anthropologist is a list of ages and sexes, which he can match with his records of cultural associations, and a few cranial comparisons which will tell him whether the people at his site(s) deviated in any respect from the physical type found in that area. Quite often, one suspects, the archeologist does not bother to tell the physical anthropologist anything about the culture of the site, the artifacts found, the burial positions, and so forth, either because he has not yet analyzed his data, or because he has the false impression that the physical anthropologist can function better if he has no preconceived ideas as to what the skeletal analysis ought to show.

The foregoing report, although prepared somewhat hastily and under handicaps, suggests what can be learned if the physical anthropologist is given all of the data available. Had we not had access to Miller's finished manuscript and field notes, and especially the sketches, it would have been impossible to give a full account of the burial practices, to make any sense of the differences in tooth wear and caries at the two sites, or to interpret much of the other data. Nevertheless, the uneasy feeling that much more could have been learned—and may be learned about bones yet to be excavated—prompts us to make the following recommendations:

1. That, where possible, the archeologist supply the physical anthropologist with sketches, notes, and preferably photographs of each of the burials as found. With this information, the anthropologist has some means of deciding whether markings on the bones were made by the archeologist's tools or at the time of burial, and of seeing for himself whether the presence or absence of artifacts and the position and condition of the bones are significant. With information on the cultural background of the bones, he has some idea of the problems the bones may present, and where to look for comparative data.

2. That, where possible, the bones be left untreated with alvar or other solutions, which simply glue the dirt to the surface, making them impossible to clean, difficult to examine, and nearly impossible to restore. Such treatment also introduces undesirable artifacts if detailed examination by radiography or chemical analysis should be in order. Fortunately the Occaneechi bones were in proper condition for processing in the laboratory with minimum difficulty.

3. That, where possible, the physical anthropologist has an opportunity to examine the bones before cleaning, and especially before re-

pair. Fortunately the Occaneechi bones had not been thoroughly cleaned when they were examined, and the presence of dirt in some of the deeper holes was reassurance, in some cases, that the cuts had not been made during excavation. Unfortunately, where breaks were associated with the cuts, the bones had been repaired, so that it could not be learned whether the breaks had occurred at the time of burial, or at some time after excavation. The color of the uncleaned, broken surfaces, might have given some indication. And it would have been easier to see cortical changes in the pathological bones. Taking apart repaired bones, or making fresh breaks is to be avoided if possible.

It would be unrealistic to expect that in every case cooperation of this sort would produce fruitful results. Nevertheless, there is so much yet to be learned, of mutual interest to ethnologist, archeologist, physical anthropologist, and historian, that it would seem unwise not to allow the anthropologist every opportunity to extract from the bones as much information as he can. It is even possible that, in time, the skeletal appendix may come to be more than a dull list of ages and sexes, buttressed with lengthy tables of cranial comparisons.

RESUME AND CONCLUSIONS

Although metric differences in the skeletal remains from the Occaneechi Island area do not reflect many clear differences between the early people of the Tollifero site and the late people of the Clarksville site, other evidence from the bones shows fairly clear differences in their ways of life. Some of these differences are correlated with the cultural evidence already pointed out by the archeologist; others are revealed only by an examination of the bones.

The physical differences separating the populations are slight. There is some difference in head form, with the earlier peoples more dolichocephalic than the later, but long to medium skulls appear in both populations. The males of the later population are slightly taller than the earlier males, but the females of the two groups are of about the same height. Whereas the change in skull vault form may be evolutionary in nature, and thus correspond to the analogous changes which have been observed elsewhere in the Americas, the increase in height may be associated with change in diet following the introduction of agriculture. When the series are divided by age and sex, and the damaged specimens are eliminated, the resulting series are too small to give statistically significant answers to the usual questions that arise: The differences between the groups are neither small enough to rule out admixture, evolution, or population replacement as agencies of change, nor great enough to rule out population continuity. The problem is complicated by lack of adequately documented crania for comparison. The area is known to have been occupied in the 1500's and later by groups of Eastern Siouan, Iroquoian, and Algonquian stock; but no crania reliably assignable to any of these groups are available for comparison with the Clarksville Series. Therefore, unless one is willing to ignore geography—and the variations expectable with this factor—and to compare the Clarksville crania with series far removed in time and space, one is left with only the few "late" cranial series from the Southeastern States. The utility of the latter series, it must be noted, is diminished because of the deformity so often present in them, but absent from the Clarksville skulls. Series for comparison with the Tollifero crania are even harder to select, for little is known of the tribal—or cultural—affinities of the groups inhabiting the Southeast during the period when this site was occupied. One's choice of comparative material, and the conclusions arrived at, will probably depend upon one's theories about the time and manner of population of the Southeastern United States. There is probably enough difference between the various "early" series to support a theory calling for successive migrations of physically, linguistically, and culturally distinct peoples. But, in all fairness, there is probably enough similarity to support a contrary theory calling for a homogenous parent population which differentiated in situ, by inbreeding, natural selection, or some other agency. The variability within the Tollifero and Clarksville Series is about what one would expect in any series of comparable size. Thus there is no evidence either for or against admixture with other groups—particularly when there is no information as to how different these other groups were physically. If there had been a few skulls of markedly aberrant form at the Clarksville site, one could perhaps interpret them as evidence for mixture with other groups. This in turn could have been cited as evidence for a late date for the site, since in 1670, when Lederer visited them, the Occaneechi Indians living in the vicinity were traders, who had absorbed members of other groups (cf. Swanton, 1946, pp. 164, 739).

The dentitions of the Tollifero and Clarksville people confirm the conclusions of the archeologist as to the general type of culture. The badly worn, relatively sound teeth of the Tollifero people indicate a coarse diet such as that available to a hunting and gathering people; while the relatively unworn, badly decayed teeth of the Clarksville people indicate a softer diet, high in carbohydrates, such as would be available in an agricultural economy. The decay of the teeth may have been increased by poor calcification, due to a reduction in the calcium content of the diet, a strong possibility in view of the demineralization of the long bones described in the section on bone pathology. The diet suggested by the condition of the teeth of the people at the Clarksville site corresponds very closely to the diets described by the earliest visitors to the Southeast, so closely that this correspondence might be interpreted as evidence for a late date for the site.

The skeletons of the Occaneechi Indians suggest that the change from a hunting and gathering economy to an agricultural economy was at best a mixed blessing. The gains may have been a more settled way of life, a somewhat more abundant and reliable food supply with a little less effort expended, but aside from a slight increase in height in the Clarksville men, and the survival of a few individuals to greater ages, general health seems to have been adversely affected. The marked increase in dental decay has just been reviewed; but there are also the changes in patterns of death rates and pathology. Although one would expect that the Clarksville people would have been exposed to fewer injuries, because of their more settled way of life, by far the greater number of bone lesions of traumatic origin appear in the skeletons of this group. The thickened, bowed light tibiae found in many adults suggest dietary deficiencies which may have lowered the people's resistance to injury and disease. The frequency of these demineralized bones and their form suggest chronic dietary deficiency, rather than seasonal food shortages or periodic famine resulting from crop failures. The latter, however, are possible, for settlement tends to deplete the game supply; the climatic factors causing crop failures would drive the game further afield in search of forage; while a people accustomed to depending primarily upon agriculture, might experience difficulty in reverting to hunting and gathering when necessity arose. Unfortunately, the archeological evidence does not indicate whether the Clarksville people had a mixed hunting and agricultural economy, similar to that of other Virginia Indians, or depended primarily on agriculture. Even in historical times seasonal food shortages were not uncommon.

The marked difference in population composition and death rates at the two sites is probably associated in some way with the difference in the way of life. Over half of the skeletons recovered at the Tollifero site were those of adult men (54 percent), the remainder being women (22 percent) and children (24 percent). At the Clarksville site, 36 percent of the skeletons were those of adult men, 23 percent those of women, and 44 percent those of children. If women outnumbered men in the burials, one might conclude that the males died elsewhere, possibly being killed off in war or hunting accidents; but the considerable excess of males over females cannot be explained in this way, and is too great to be attributed to a random deviation in sex ratios at birth. Similar sex and age ratios are found at other early Southeastern sites, so that these cannot be dismissed as artifacts of preservation, excavation, or sexing. The one explanation that comes to mind is cultural. It is possible that in a subsistence economy, men would be more highly valued because of their productivity than women or children, whose role would more likely be that of consumers, and whose main contribution would be to help carry home the catch and cook it. If deaths occurred while groups were away from their home base on extended hunting trips, the bodies of men, and particularly the better hunters, are more likely to have been carried back for burial than the bodies of women and children. These might have been defleshed for ease in transportation if distances were great. Nevertheless, there is the fact that knife marks are found on the bones of both men and women at the Tollifero site. None of the accounts of the early Southeastern Indians throw any light on the matter, so any conclusions as to the cause of the apparent difference in population composition must await further evidence.

The Clarksville skeletons reveal evidence of other cultural differences setting them apart from the Tollifero people: Three of the later crania show cuts on the vault suggesting scalping, whereas such marks were not seen on any of the Tollifero skulls. Burial practices seem also to have undergone some modification. At the earlier site, only a few of the bodies seem to have had the flesh removed before burial: Some of these were buried shortly after cleaning while still held together by ligaments; some were kept a while and eventually interred as bundle burials with recently deceased individuals; and at least one seems to have been the guest of honor at a ceremony in which his skull and bones were cracked open and the brains and marrow removed, the bony remnants being placed in a pile in a pit and covered with dirt and stones. Most of the bodies, however, were simply buried, apparently without any further ado, although some were accompanied by shell or copper beads and turtle-shell rattles. On the other hand, the Clarksville people seem to have cleaned all of the bodies more or less thoroughly, probably when somewhat fresher, judging by the greater severity of the markings on the bones. The skeletons were buried shortly afterward, still articulated by ligaments and reclothed in their usual ornaments. Holes drilled into the marrow cavities of some of the bones suggest that the marrow had been sucked out. The change in the custom is difficult to interpret. There is a certain logic in a seminomadic group removing the flesh from the bodies of those people whose remains they wished to keep with them, particularly if they were to be carried about, and eventually interring them at a more or less permanent occupation site, along with those who died there. Once the group became more settled, and there was less necessity for keeping remains in the houses, or carrying them about, one would expect the custom to fall into disuse: Instead, it seems to have spread, so that all of the deceased were given this treatment, even though they appear to have been buried almost immediately thereafter. This, however is not surprising, for every culture, including our own, carries out practices whose original meanings have been forgotten and which have become modified.

The late date of the Clarksville site suggests the possibility of contact with the earliest European explorers. Indeed, evidence of such contact would help establish more closely the approximate period when the site was occupied and abandoned. As Miller has stated, no trade goods were found at the site, so that there is no archeological evidence of European contacts. The skeletal remains give no positive evidence either. Briefly summarizing the history of the area: French and Spanish explorers had reached the Southeastern United States in the early 1500's, and the English explorers had reached the mouth of the Roanoke river, less than 200 miles from this site, by 1585, although colonization of the Virginia-Carolina coast did not begin until some 20 to 25 years later. When the first inland explorers, among them Lederer in 1670, visited the confluence of the Dan and Roanoke Rivers, where the Clarksville site was located, the Occaneechi Indians were already carrying on a flourishing trade with the other Indians of the Southeast. So well established was this trade that the Occaneechi language had become current as the trade language of the area, the tribe had absorbed members of neighboring groups, and the Indians resented the attempts of the Europeans to trade competitively. Although the first Europeans left a few trinkets during their initial contacts with the Indians, these were prized, and not likely to be passed on. What they did leave, which would become widely and rapidly distributed, was disease—smallpox, possibly syphilis, and other disorders to which the Indians had no natural immunity. If Southeastern Indian trade routes were as widely dispersed and well traveled as those in other areas (cf. Morgan 1904, vol. 1 p. 45), one would expect disease to travel at least as rapidly as goods. It is noteworthy that the archeological remains at the Clarksville site included various ornaments of copper, possibly from as far away as the Great Lakes, and shells from the Gulf of Mexico, Florida, and the Georgia coast. The latter areas, of course, were those first reached by the French and Spanish, and the areas into which diseases were first introduced. One would think that if contagious diseases had been introduced into those areas, they would have been brought north by the same chain of exchange which brought the shell ornaments, reaching the Clarksville area not much later than the trade goods. If this did happen, the diseases reaching the area did not include any of those, such as syphilis, which leave marks in the bones. The absence of evidence of European disease, then, is an argument for a pre-Columbian dating for the site.

On the other hand, there is evidence in the bones found at the site for many of the cultural practices observed by the earliest explorers: These include scalping and burial practices, as well as dental evidence for a fairly sophisticated cuisine. Whether these are valid arguments for a late pre-Columbian dating is uncertain. Customs do not seem to have changed rapidly. The origin of scalping is unknown, but it persisted in some parts of North America well into the 19th century, some 300 years after it was first described. Removal of flesh from the bones was practiced in the days of the Tollifero people, and was recorded by the 17th-century explorers and colonists, and as late as the early 1800's (cf. Swanton, 1946, p. 726). Finally, there is no particular reason to expect great changes in diet once agriculture and appropriate cookery have been introduced into a group, until further food items are made available and become accepted. Thus the correspondence between the customs discernible from the bones, and those recorded by the earliest explorers may have little specific significance for dating.

Summing up, we find in the human skeletal remains from the Tollifero and Clarksville sites a wealth of information on a variety of topics: physical, physiological, biological, medical, cultural and historical. Part of this information, as one would expect, confirms what the archeologist had already learned from analysis of the material cultures; part is useful for explaining some of his findings. Part, of course, has bearing on the sequence of human physical types in the Southeast. But in this instance, by far the largest part of the information yielded by the human bones is cultural, pointing up the biological and social consequences of some of the cultural raw data, and revealing the presence of customs whose existence was not suspected when the examination of the bones was undertaken. One might expect, with a hunting and gathering group, that the people would have badly worn teeth, reflecting a coarse diet; and that the ratios of skeletons of men and women, adults and children might be significantly altered in consequence of a seminomadic life. Agriculture implies a more settled way of life (and a more "normal" population distribution), and better-fed, taller, healthier people; but somewhat unexpected phenomena are found. The very extensive tooth decay and light wear suggest not only use, but possibly even abuse, of the new food supply; and the increase in the number of skeletons showing pathological changes, with the increase in child mortality, indicates not an improvement, but a decline in general health. Among the completely unexpected observations are those dealing with burial practices in the two groups, indicating both change with time and continuity in earlier and later practices. The gradual change in cultural pattern parallels the gradual change in physique. With our present limited knowledge of the prehistory of the Southeastern United States, it is impossible to say with certainty whether these parallel changes were due to evolution in situ, or to replacement of one population by another of very similar culture and physique.

From the data and interpretations summarized above, it would seem that a careful evaluation of the total evidence to be found in human skeletal remains can offer a valuable supplement to the archeologist's analysis of the material culture. Yet, for the physical anthropologist's analysis to be more than a listing of the skeletons by age and sex, with statistical comparisons of measurements, and tabulations of anomalies and pathology—as dull to write as to read—adequate information on the archeological background is necessary. We take this opportunity to thank Mr. Miller for generously supplying us with the full field notes and archeological data that have made these cultural interpretations possible.

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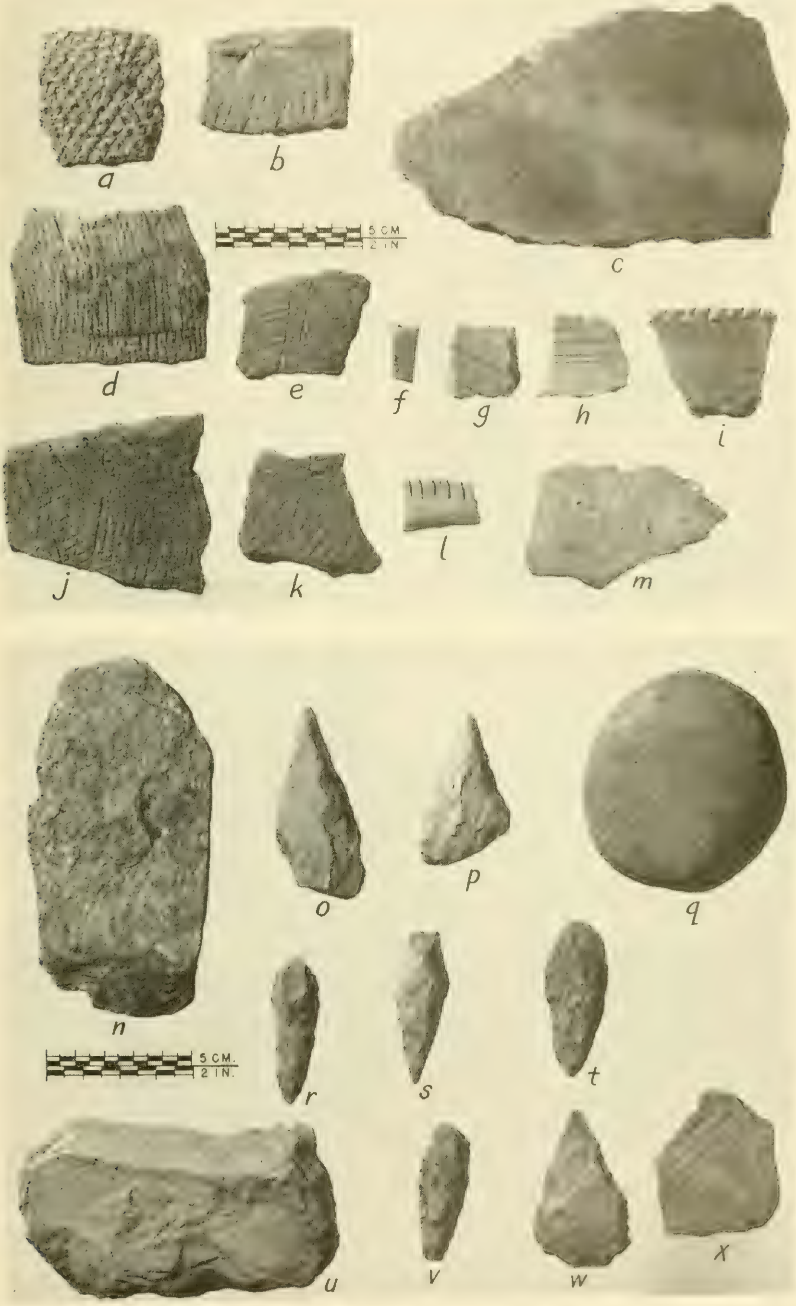
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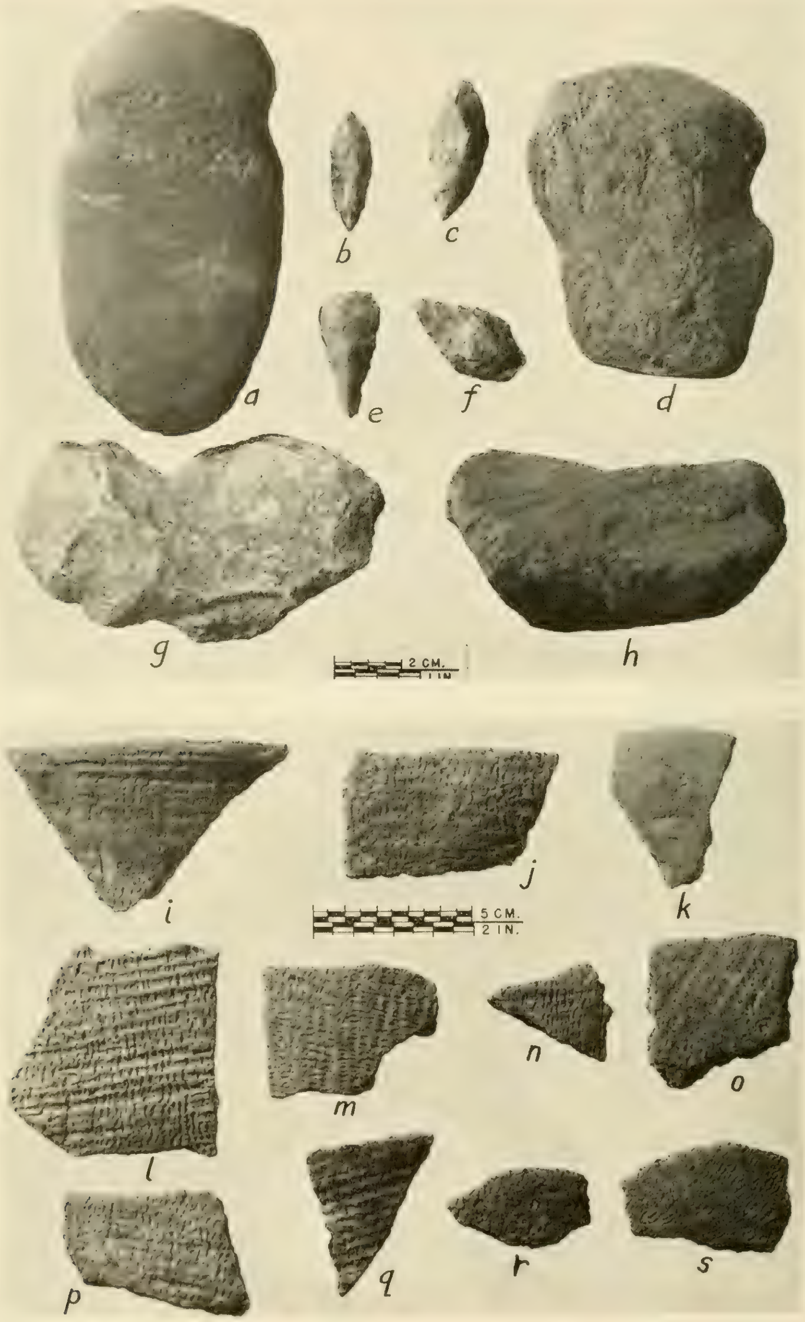
Sherds and stone specimens from site 44Mc7. *a*, Clarksville Fine Net-Impressed; *c*, Clarksville Combed; *b*, *d*, *e*, *j*, and *k*, Clarksville Cord-Wrapped Paddle; *g*, *h*, *i*, *l*, *m*, Clarksville Plain; *n*, grubbing tool or hoe; *o–p*, knives; *q*, hammerstone; *r–t*, projectile points; *u*, ax; *w*, saw; *x*, combination hone and potter's tool.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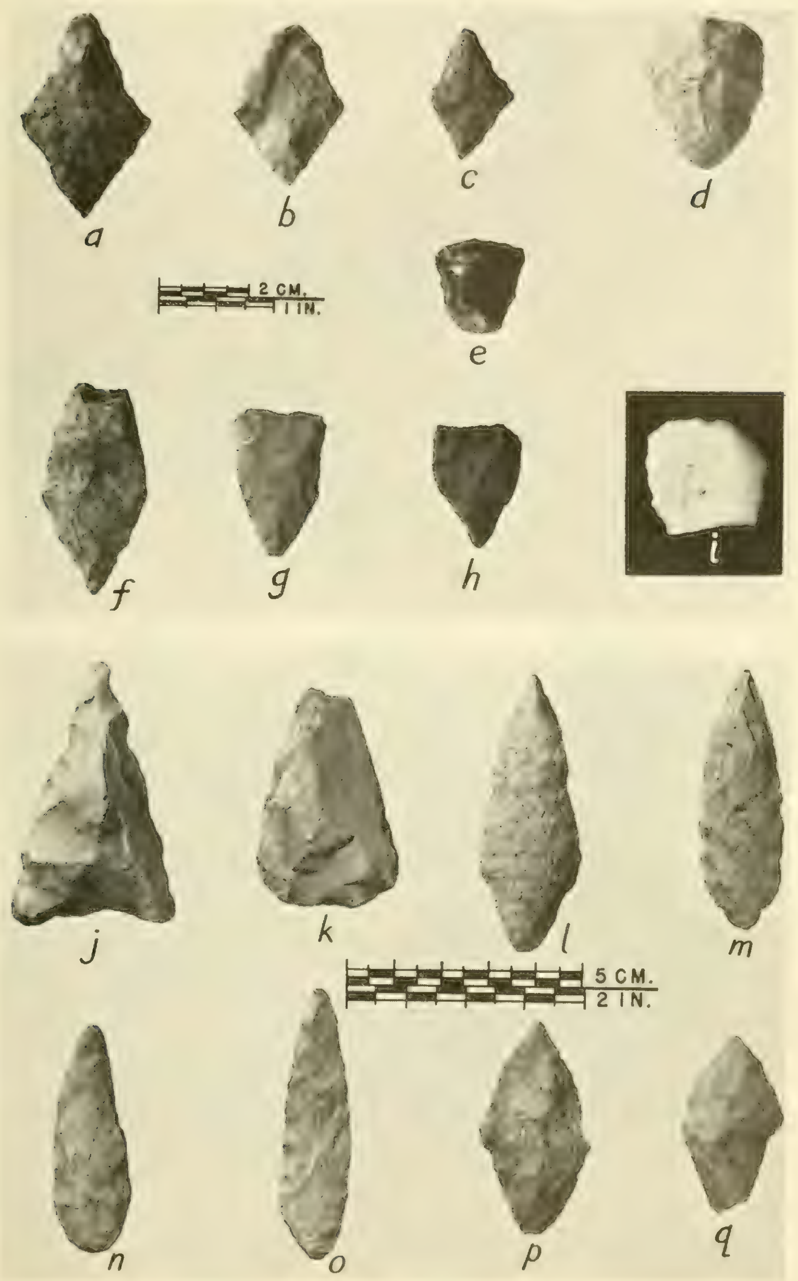
Stone tools and sherds from site 44Mc10. *a*, Full-grooved hammerstone; *b*, *c*, *e*, *f*, projectile points; *d*, *g*, notched axes; *h*, hammerstone; *i*, *j*, *l–s*, fabric-marked sherds; *k*, plain.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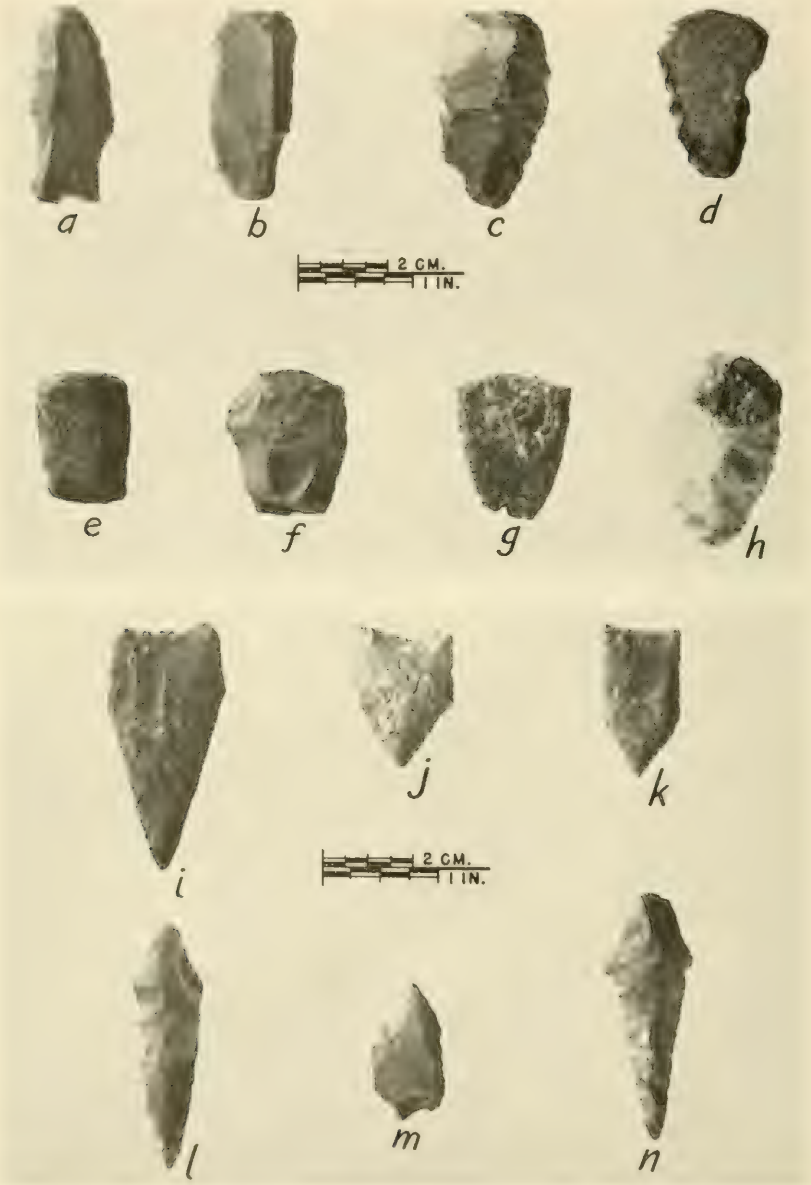
Stone tools from site 44Mc72 *a–c*, *f–h*, *l–q*, Projectile points; *e*, *i*, snub-nosed scrapers; *j*, *k*, knives.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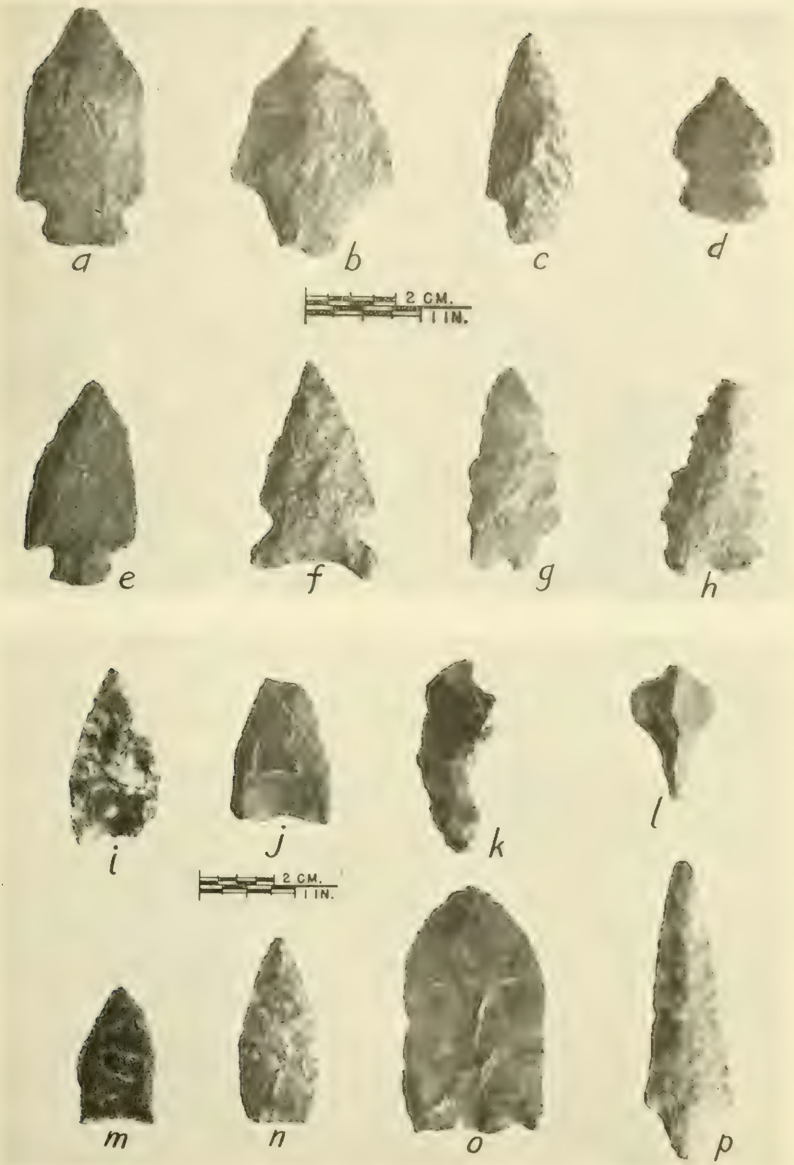
Stone tools from site 44Mc66. *a–h*, Scraper forms; *i–k*, pentagonal projectile forms; *l*, *n*, lenticular projectile forms; *m*, crude drill-graver combination tool.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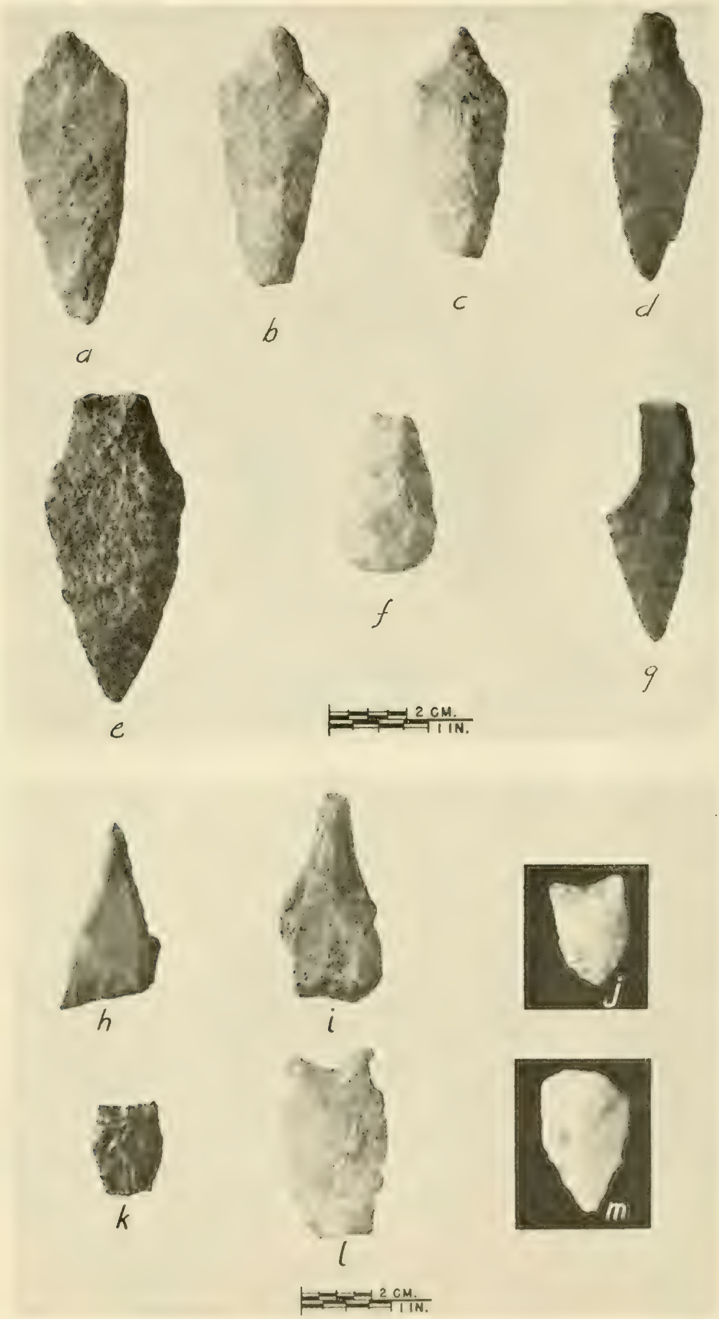
Stone tools from site 44Mc72. *a–j*, *m–p*, Projectile forms; *k*, scraper-spokeshave combination tool; *l*, winged drill form.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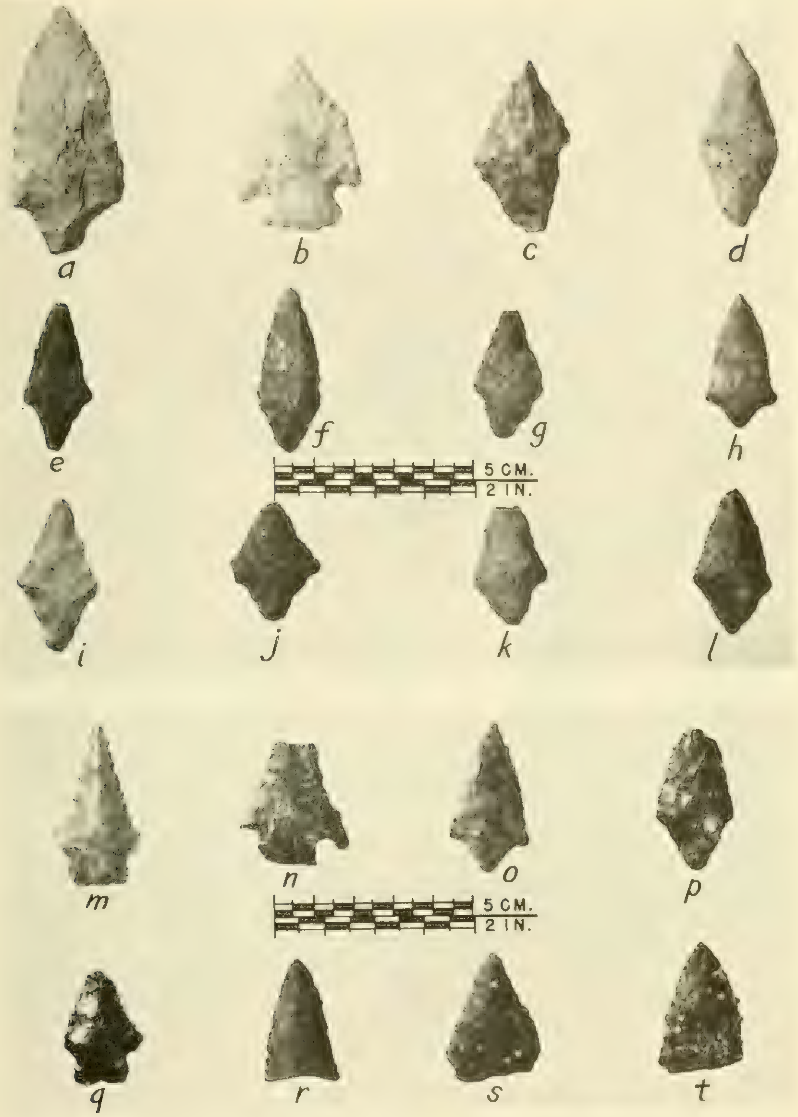
Stone tools from site 44Mc72. *a–e*, *g*, *j–l*, Projectile points, *f*, hafted bunt; *h*, *i*, crude drill forms; *m*, quartz scraper.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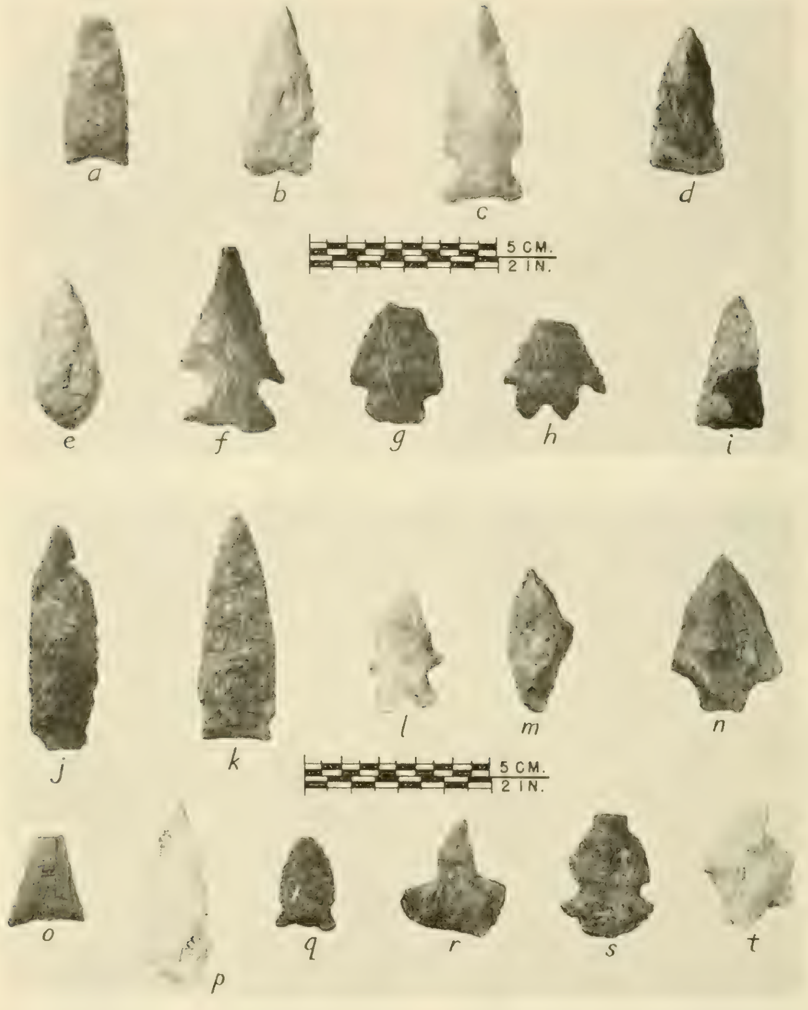
Stone tools from site 44Mc72. *a–t*, Projectile points.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5 CM.
2 IN.
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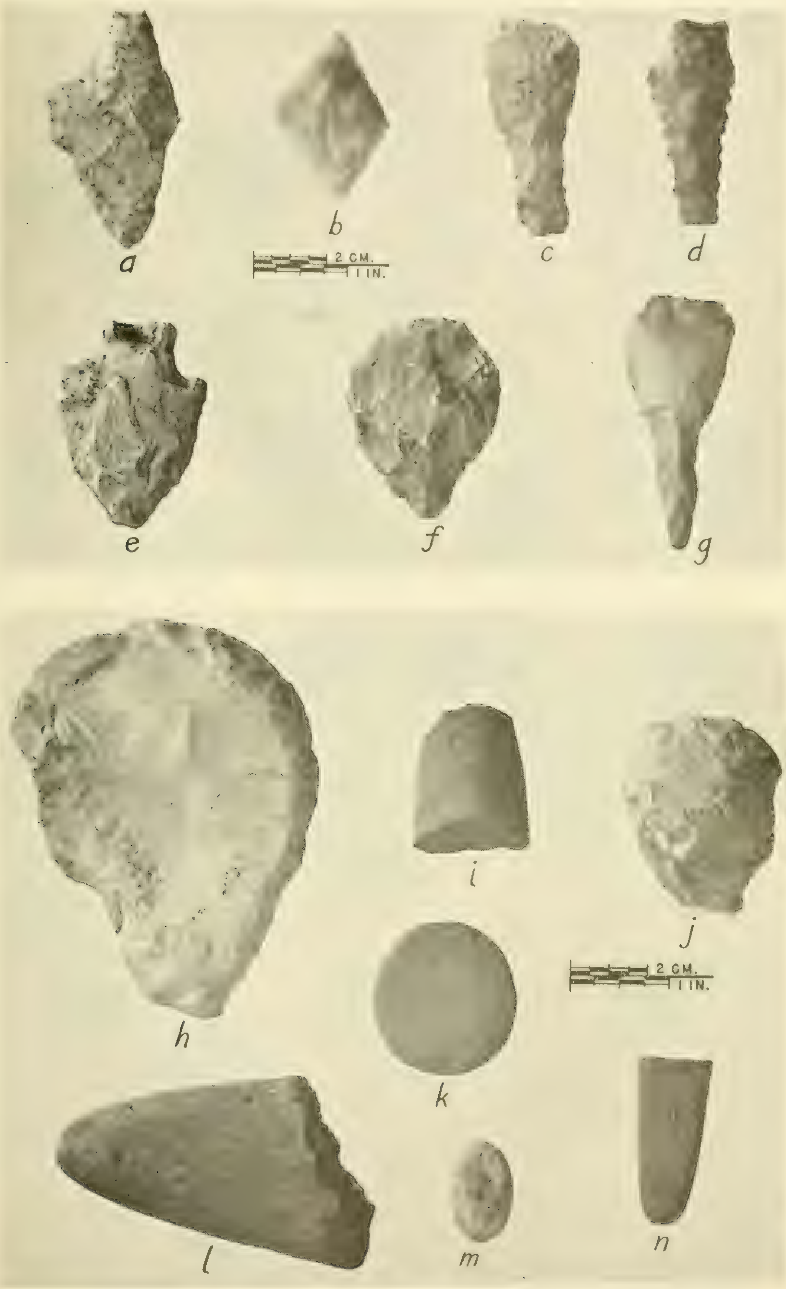
Stone tolls from site 44Mc72. *a–q*, Projectile points; *r*, winged drill; *s*, lobed base drill; *s*, winged drill.


a
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2 CM.
1 IN.
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i
j
2 CM.
1 IN.
k
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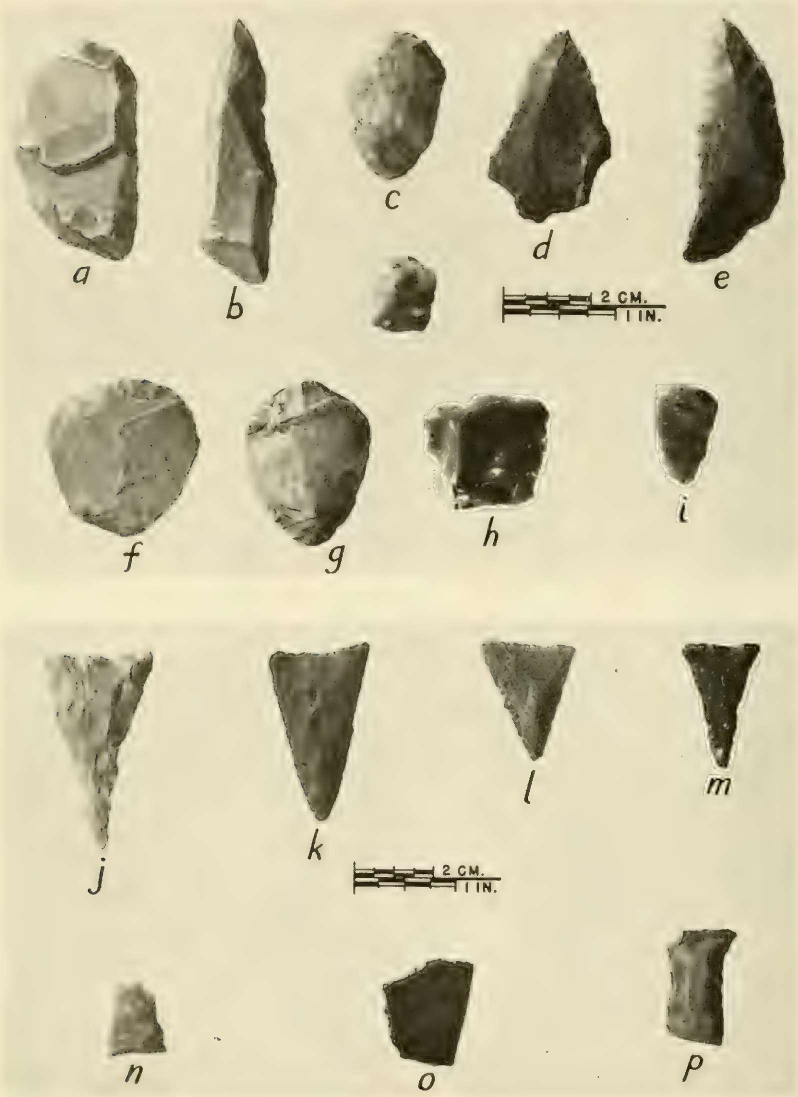
m
n

Stone specimens from site 44Mc72. *a, b, e,* Projectile points; *c, d, g,* drills; *f,* punch; *h, j,* scrapers; *i, l,* portions of celts; *k,* thin stone disk; *m,* steatite nodule; *n,* incised stone tool.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2 CM.
1 IN.
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2 CM.
1 IN.
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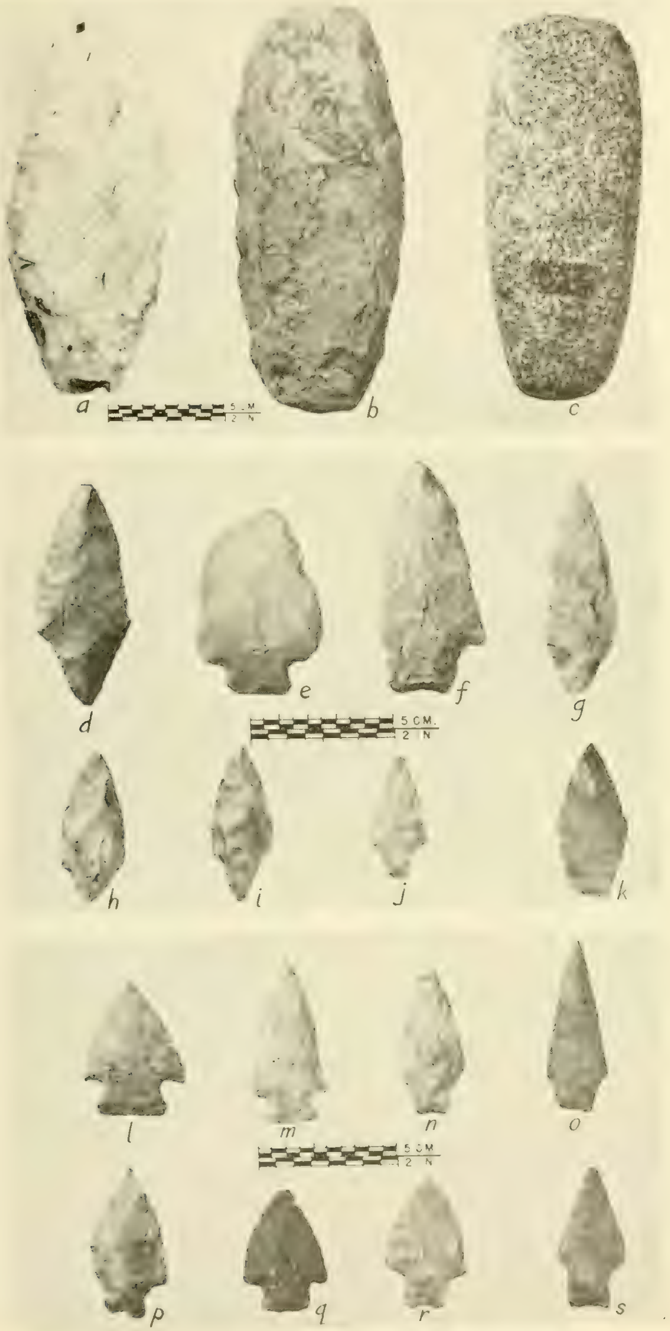
Stone tools from site 44Mc72. *a–i*, Scraper types; *j–m*, projectile points; *n–p*, scraper forms.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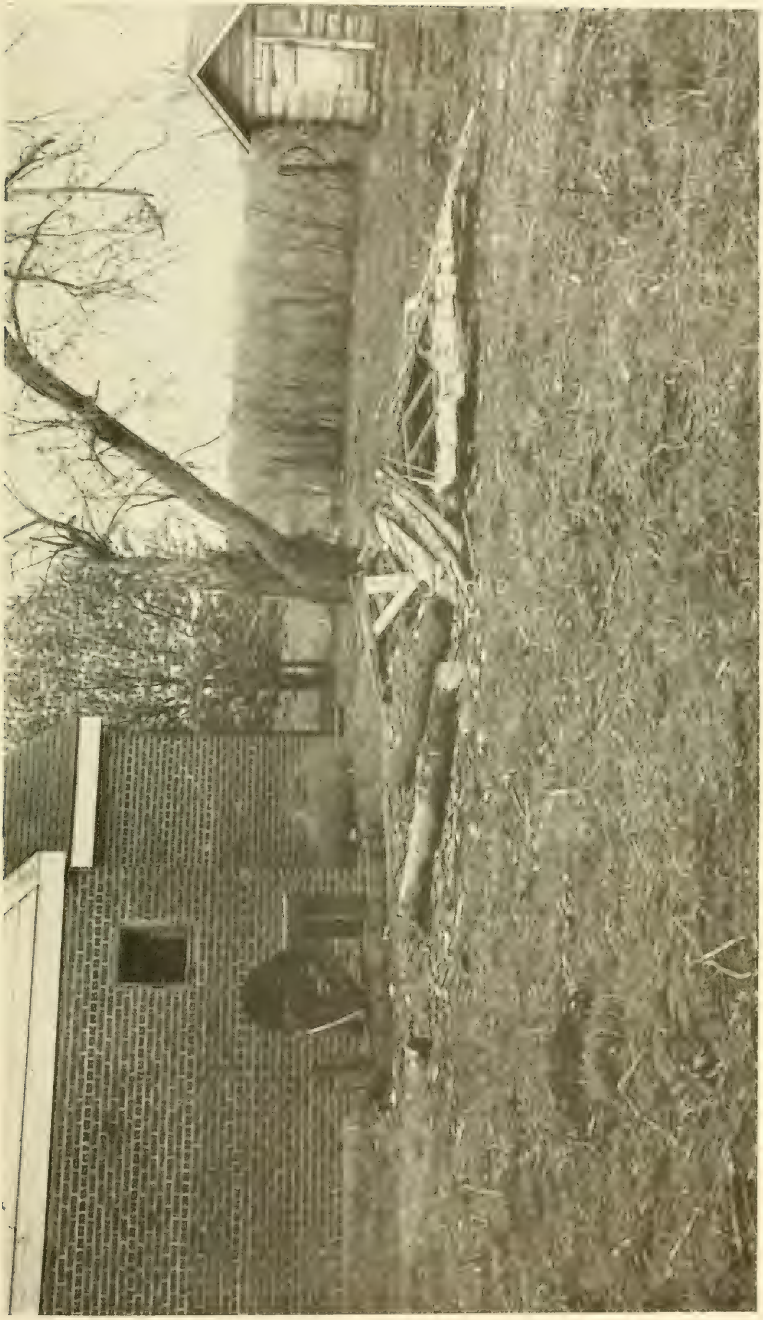
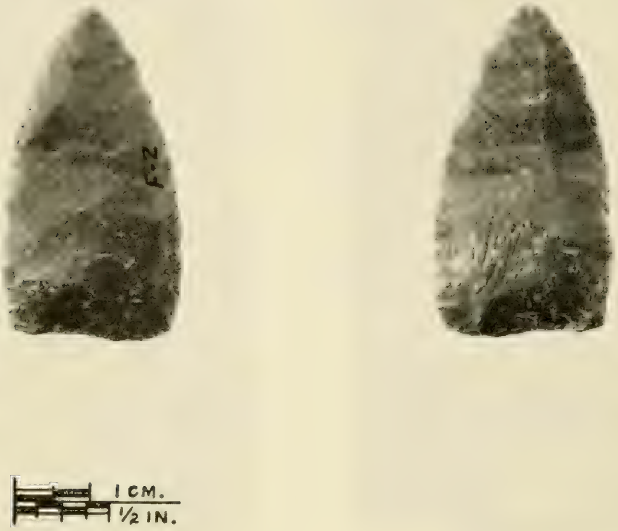
Stone tools from site 44Mc75. *a*, Hand ax; *b*, grubbing tool; *c*, blunt poll celt; *d–s*, projectile types.

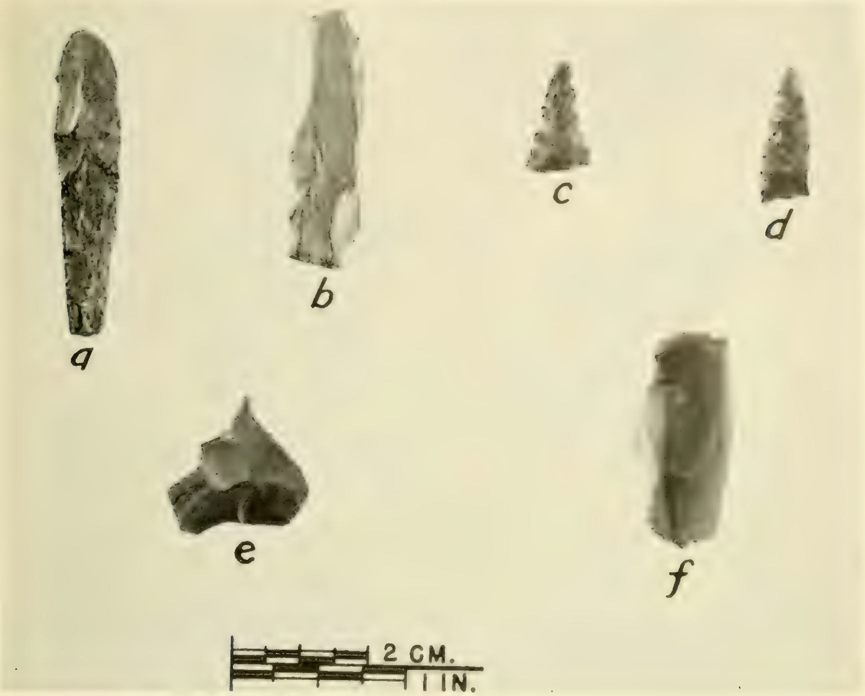
Site 44Ha2 in relation to the barns and silos on Occaneechi Island.



Site 44Ha5 in garden to the east of caretaker's brick dwelling, Occaneechi Island.



Point from site 44Mc75 showing both faces. Resembles in outline and rendition a point illustrated by de Mortillet (1881).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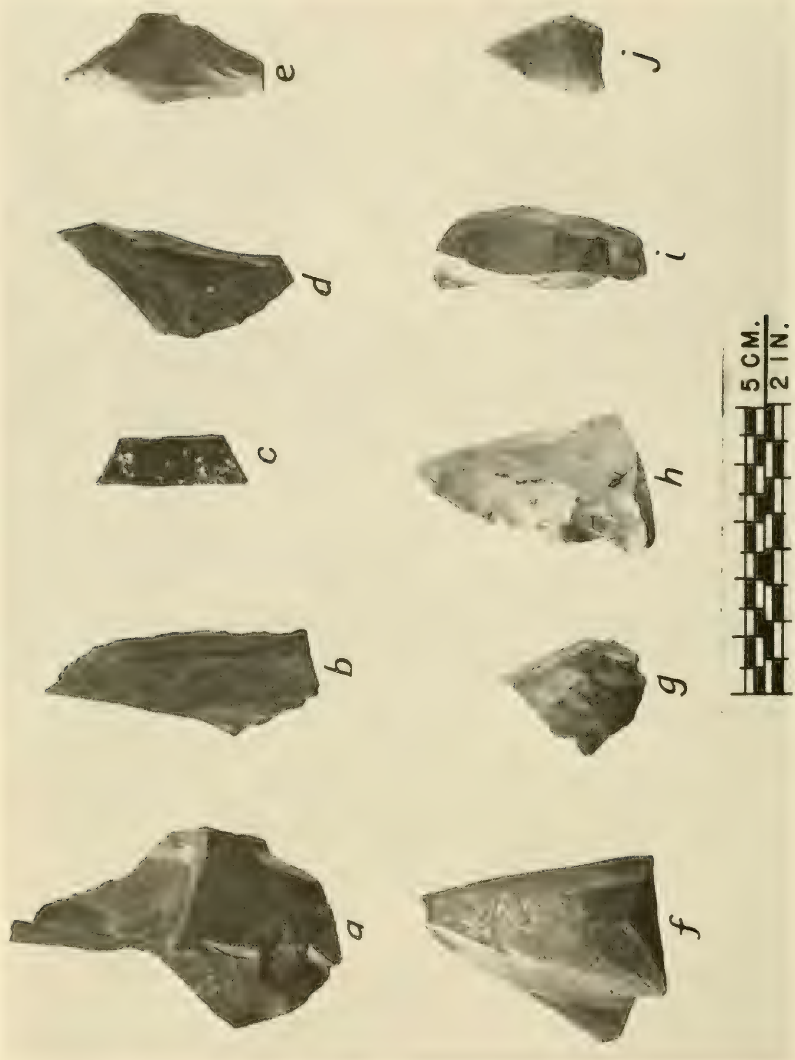
f
2 CM.
1 IN.

Microlithic tools from site 44Mc53, Grassy Creek site.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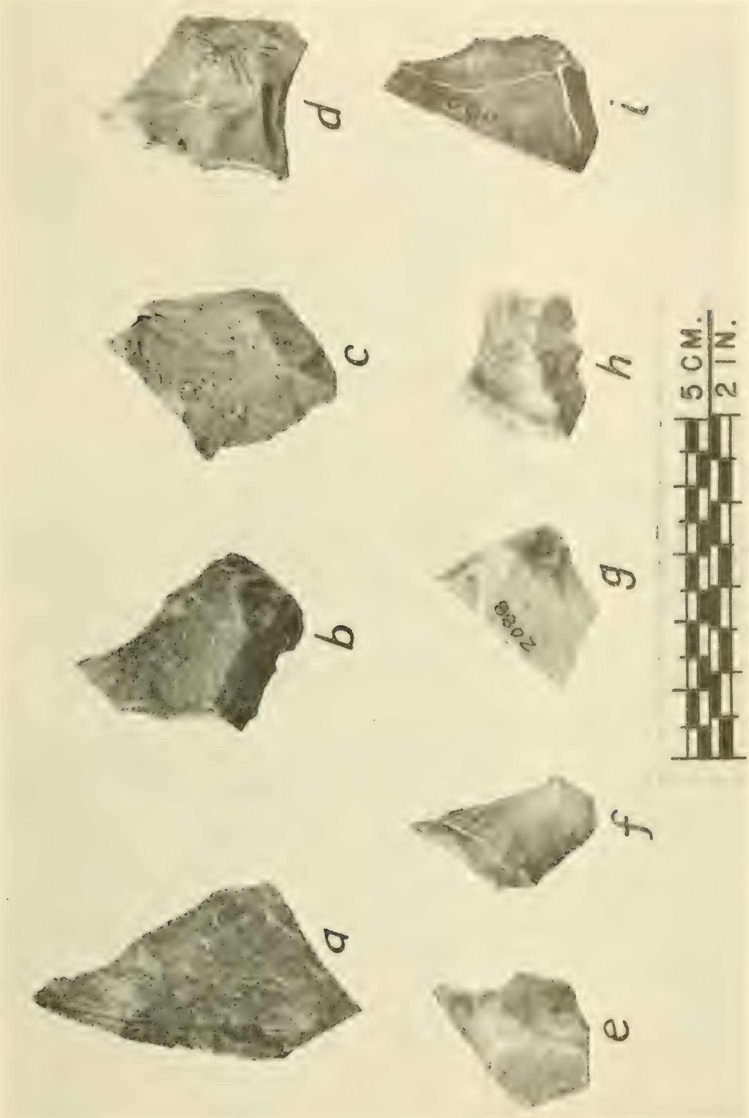
5 CM.
2 IN.

Types of burins from site 44Mc66.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5 CM.
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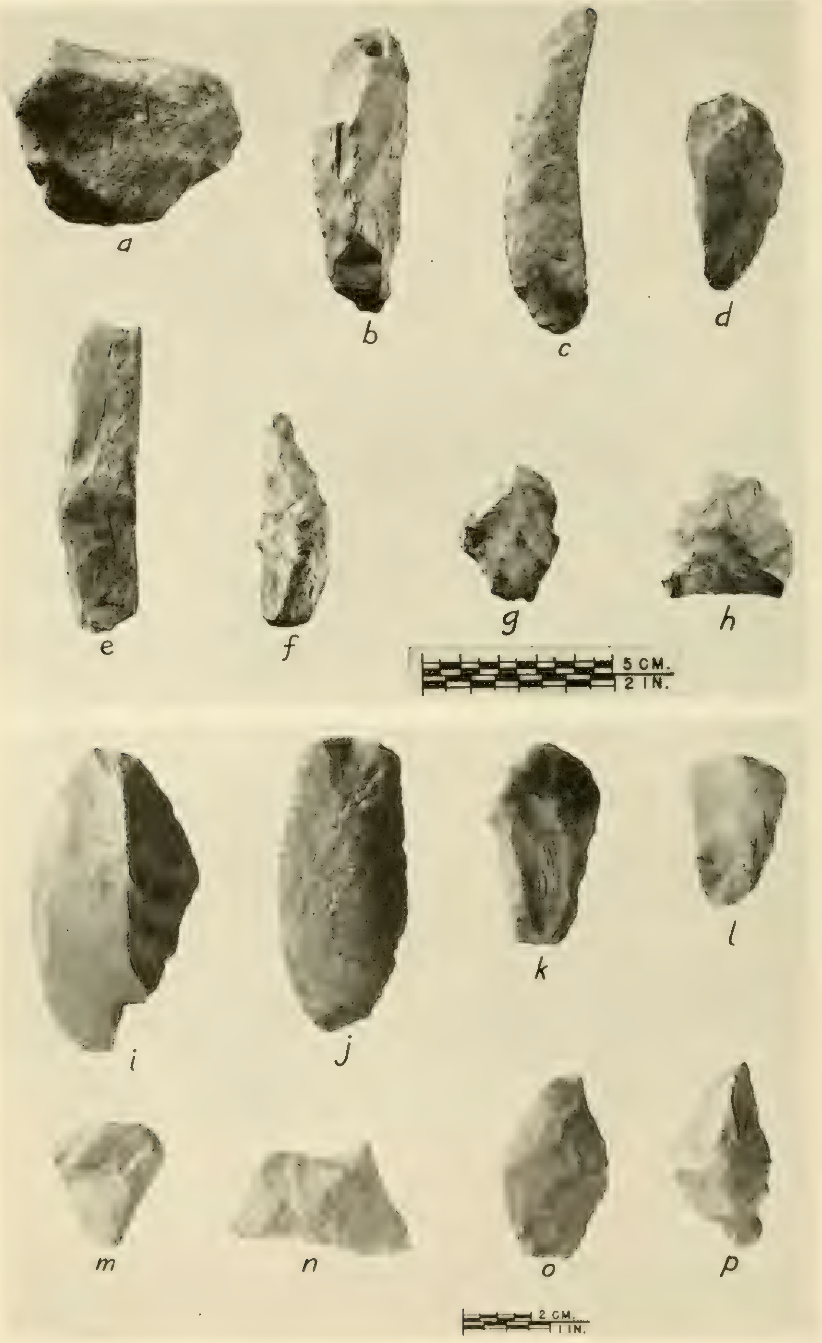
2088

Types of burins from site 44Mc66.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5 CM.
2 IN.
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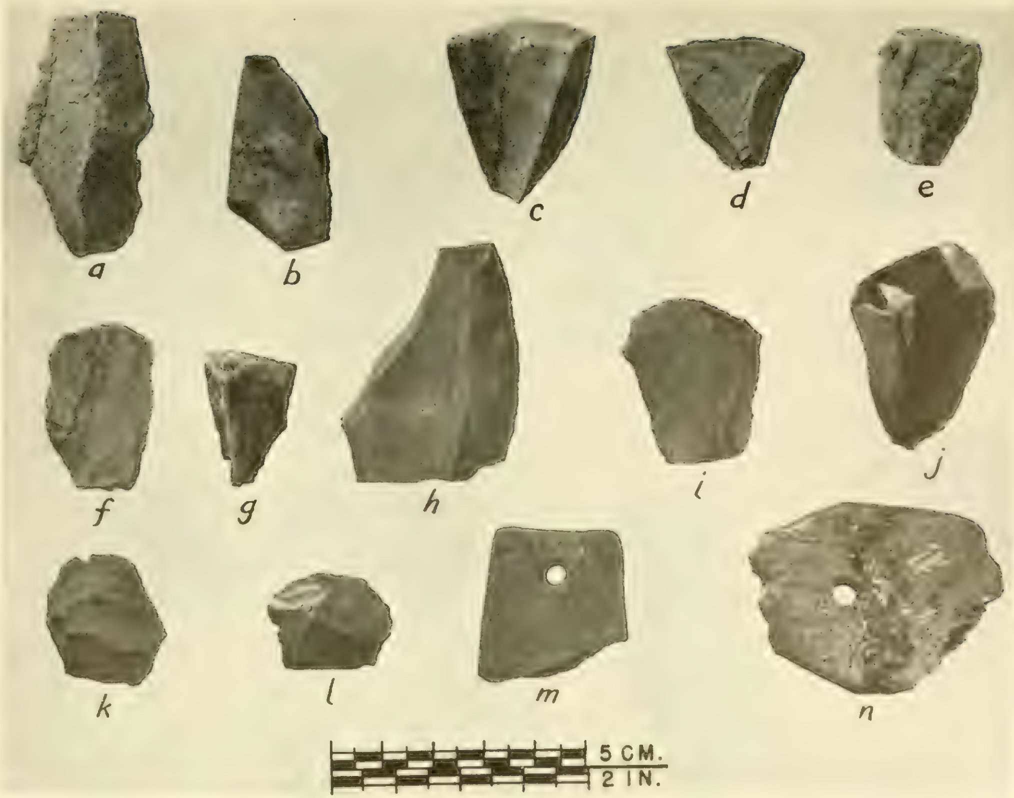
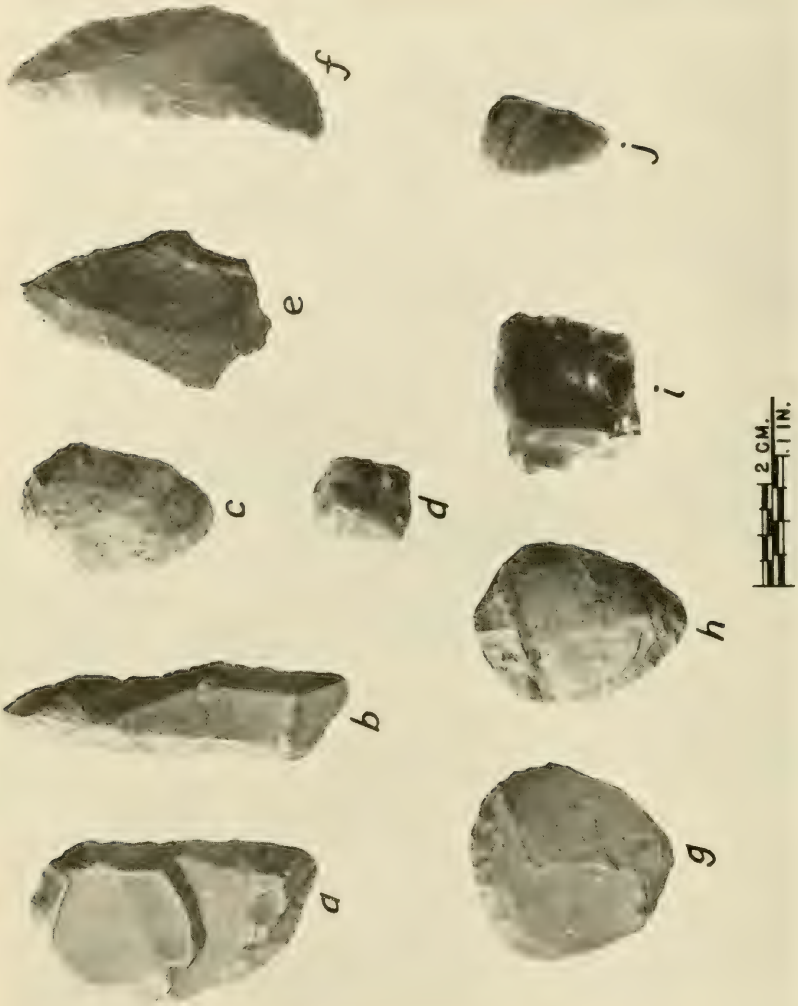
2 CM.
1 IN.

Scraper forms from site 44Mc66. *i*, Resembles a Mousterian form illustrated by Macgowan (1950, p. 78); *o*, resembles a Chellean form of MacGogan's (p. 78).



Stone tools recovered from site 44Mc66. *a*, *b*, *e–l*, Scrapers; *c*, *d*, blanks from which snub nosed scrapers are made; *m*, fragment of gorget; *n*, worked and perforated fragment of steatite.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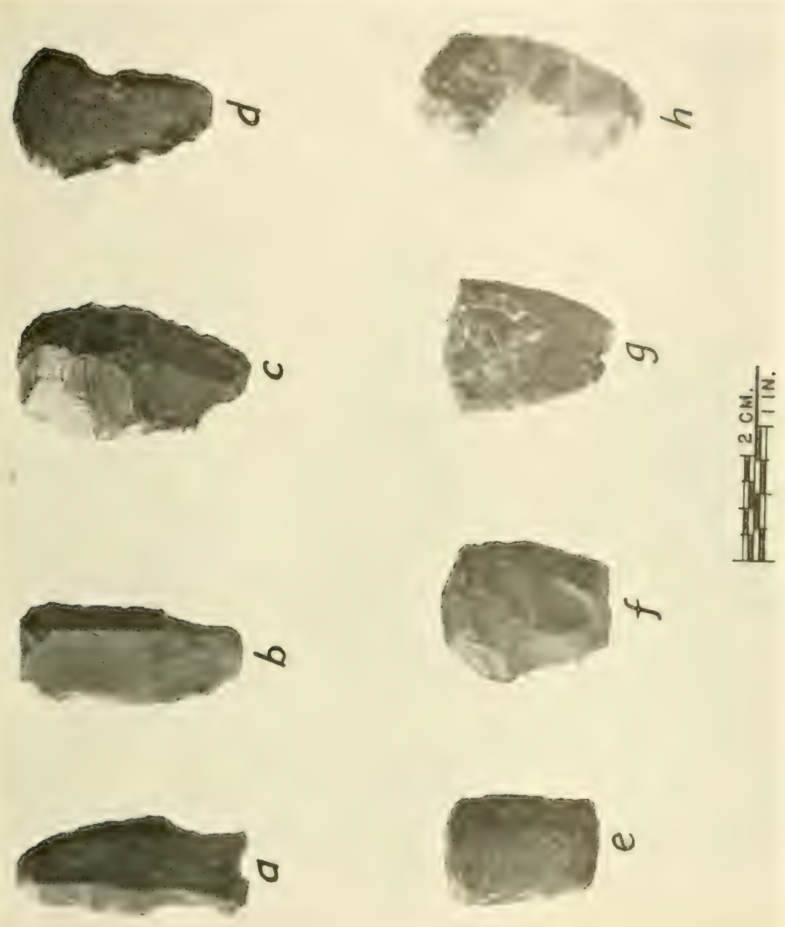
j
2 CM.
1 IN.

Stone artifacts recovered from site 44Mc75. *a–f*, *i*, *j*, Various scraper forms; *g*, *h*, sling stones.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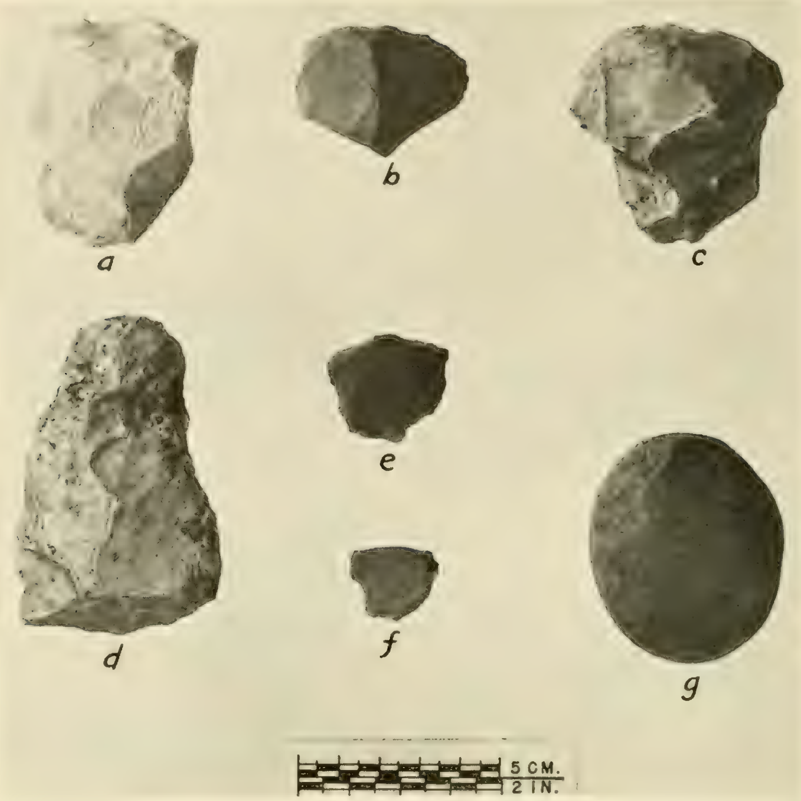
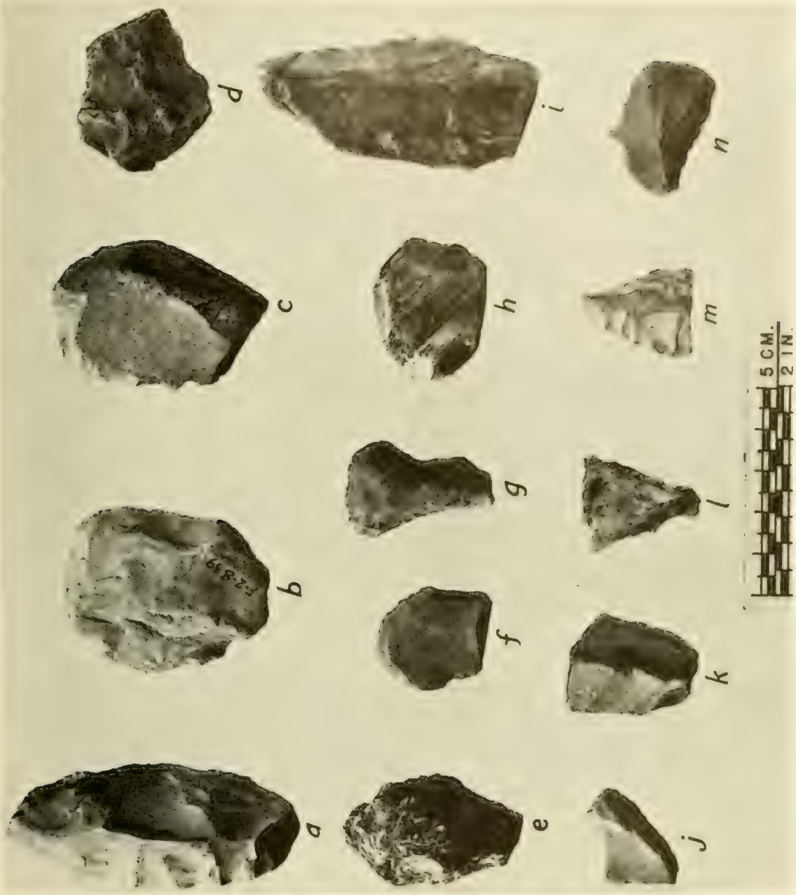
2 CM.
1 IN.

Various types of scraper forms recovered from site 44Mc66.



Various stone artifacts recovered from site 44Mc66. *a–c*, Keeled scrapers; *d*, poll end of stone hand ax; *e*, *f*, thin scraper forms; *g*, discoidal.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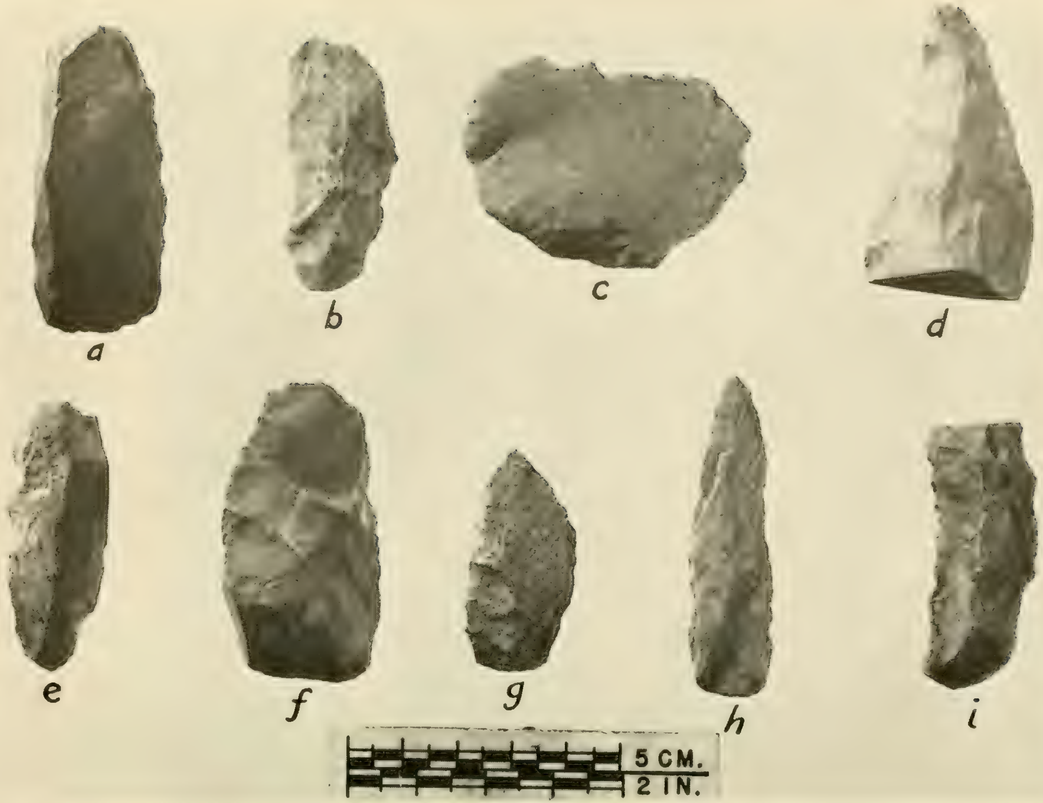
F-2-839
5 CM.
2 IN.

Various types of scraper forms recovered from site 44Mc75.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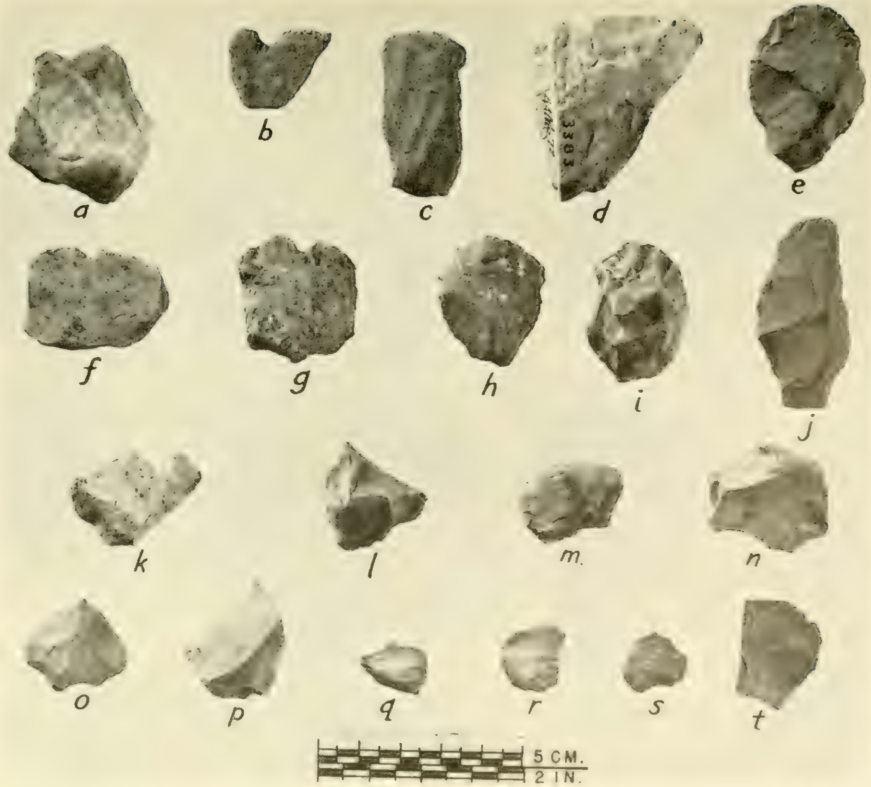
h
i
5 CM.
2 IN.

Various types of scrapers recovered from site 44Mc75.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3303
44Mc72
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m.
n
o
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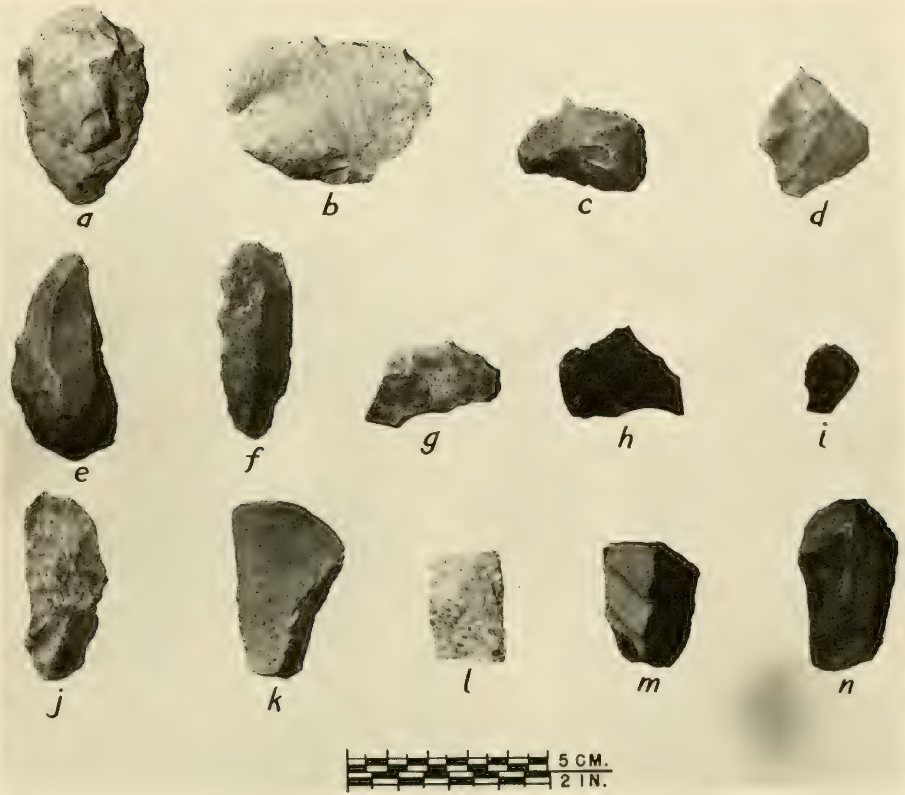
q
r
s
t
5 CM.
2 IN.

Series of stone tools recovered from site 44Mc72. *a*, *b*, *f*, *g*, *k*, Type of spoke shaves; [illegible], *r*, [illegible], graver points; *h*, *i*, sling stones; *j*, *m*, *n*, *t*, scrapers.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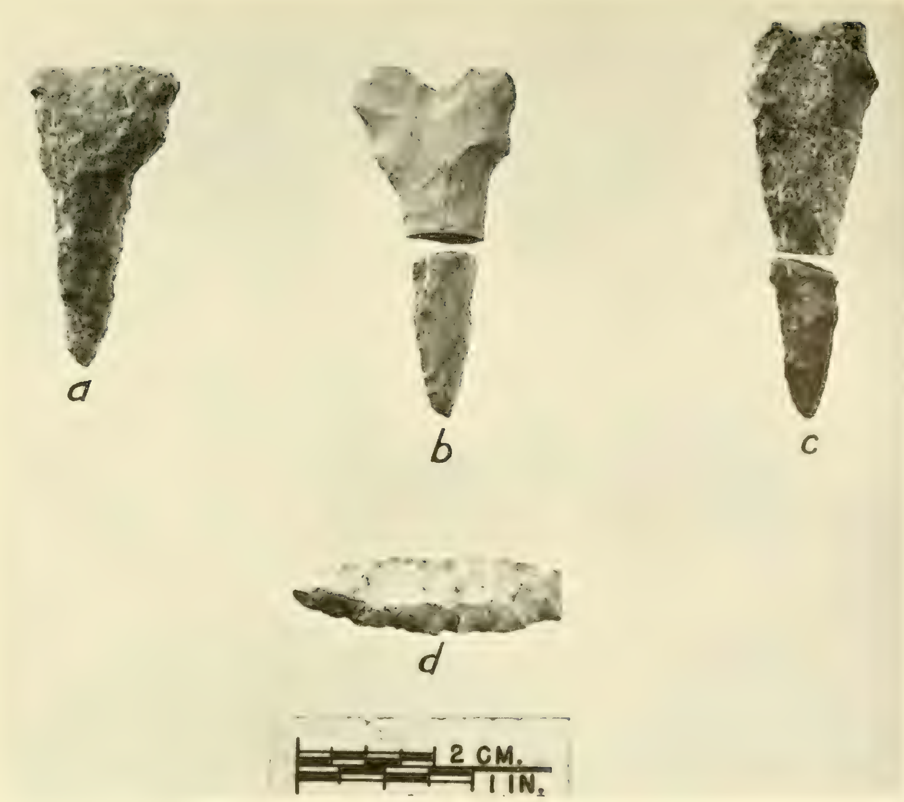
m
n
5 CM.
2 IN.

Series of stone tools recovered from site 44Mc75. *a*, Knife; *b*, *c*, *d*, *g*, *h*, *i*, gravers; *e*, *f*, *j*–*n*, scrapers.


a
b
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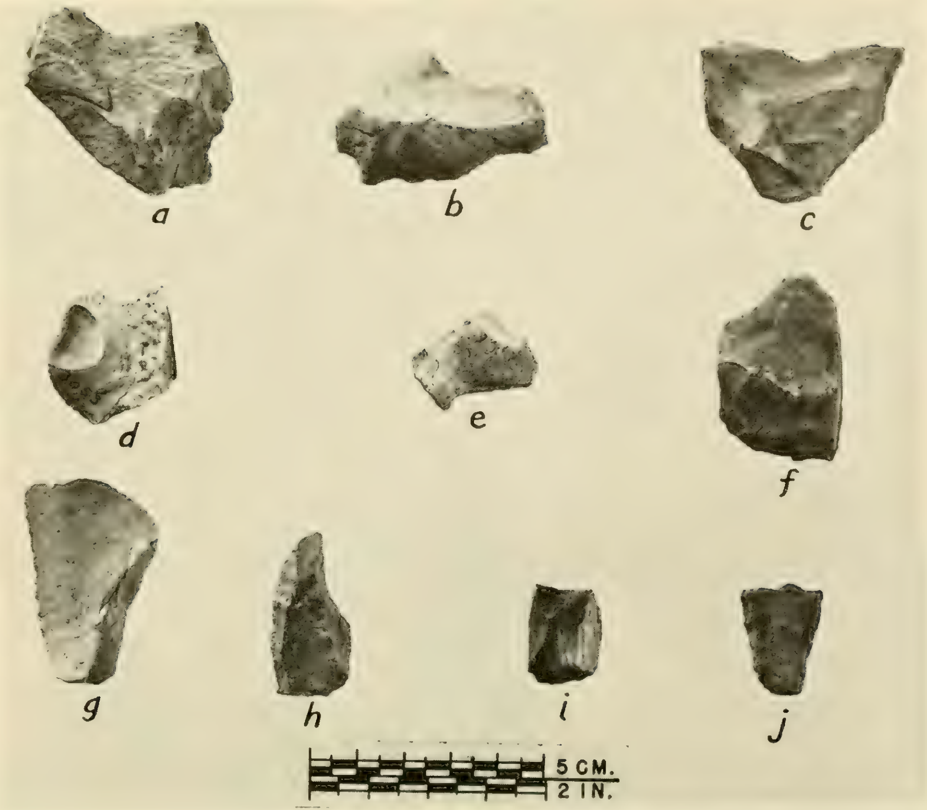
2 CM.
1 IN.

Types of stone drills recovered from site 44Mc75.


a
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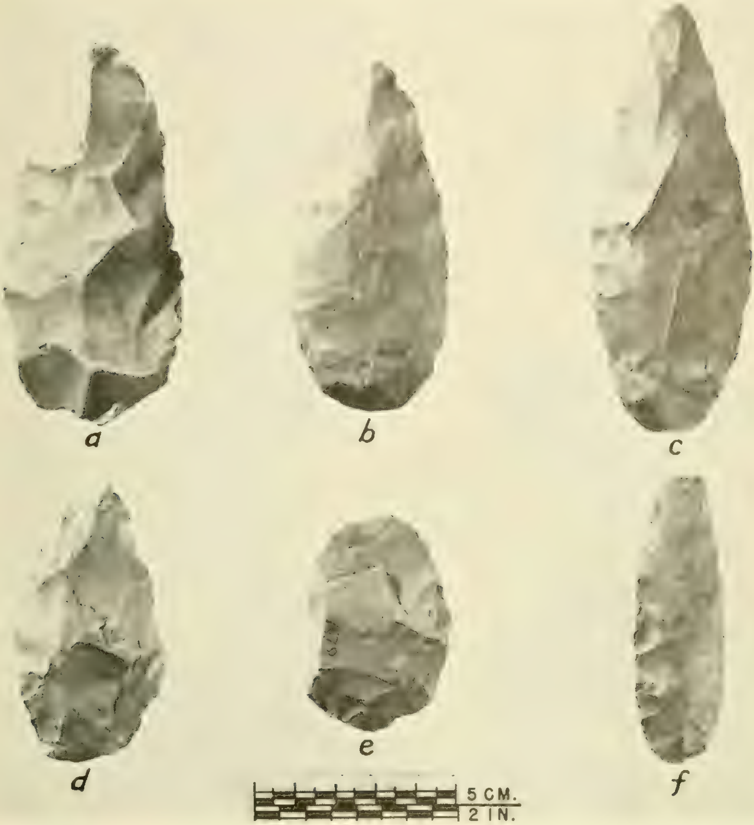
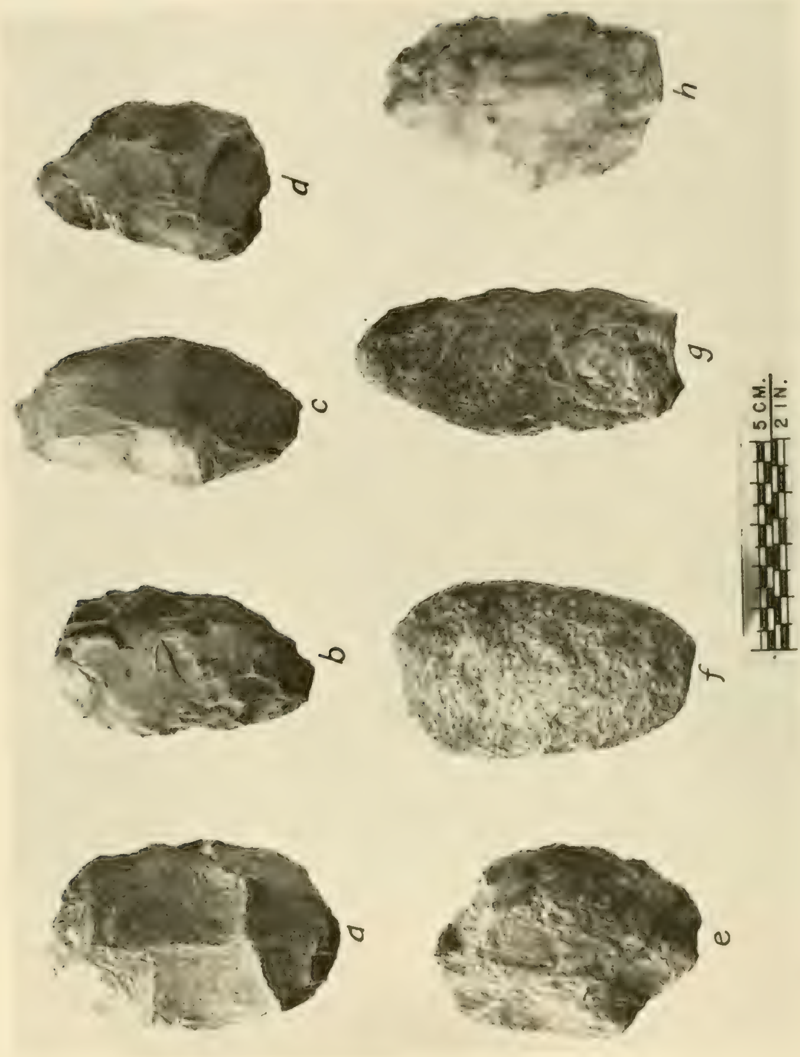
i
j
5 CM.
2 IN.

Types of stone artifacts recovered from site 44Mc75. *a–f*, Deep spoke shaves; *g*, *j*, shallow type of spoke shaves.



Types of flaked knives recovered from site 44Mc75. *d* has a small tip that might have functioned as a graver.


a
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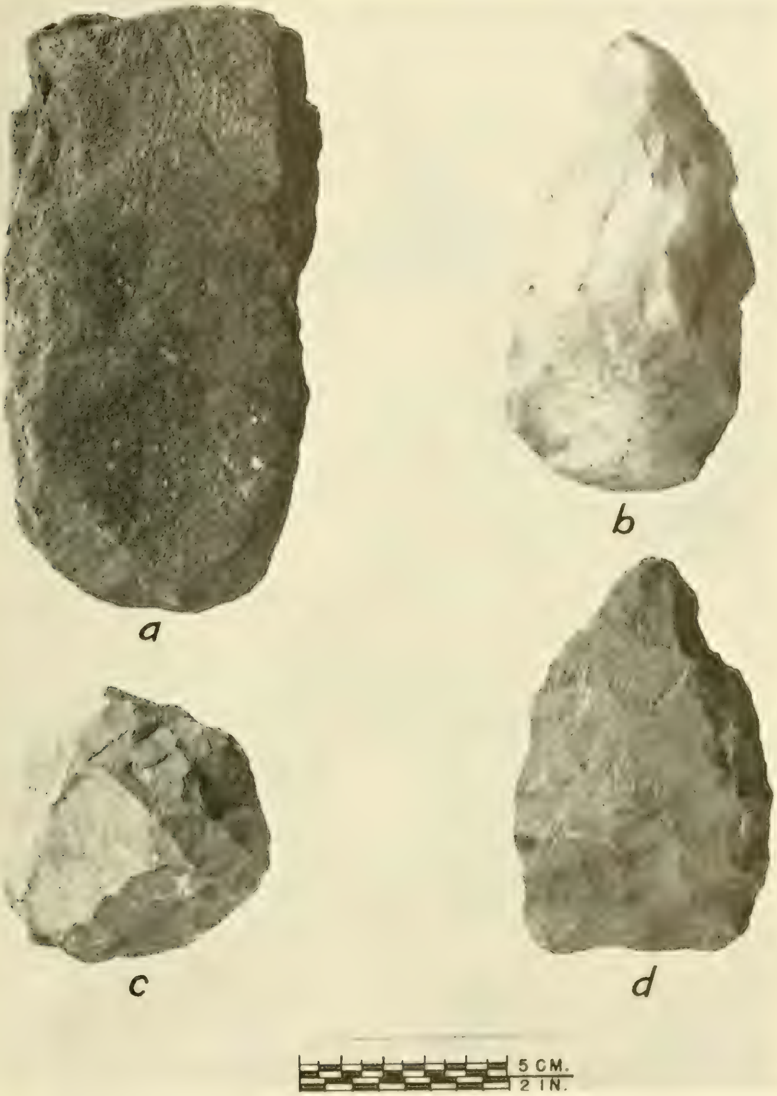
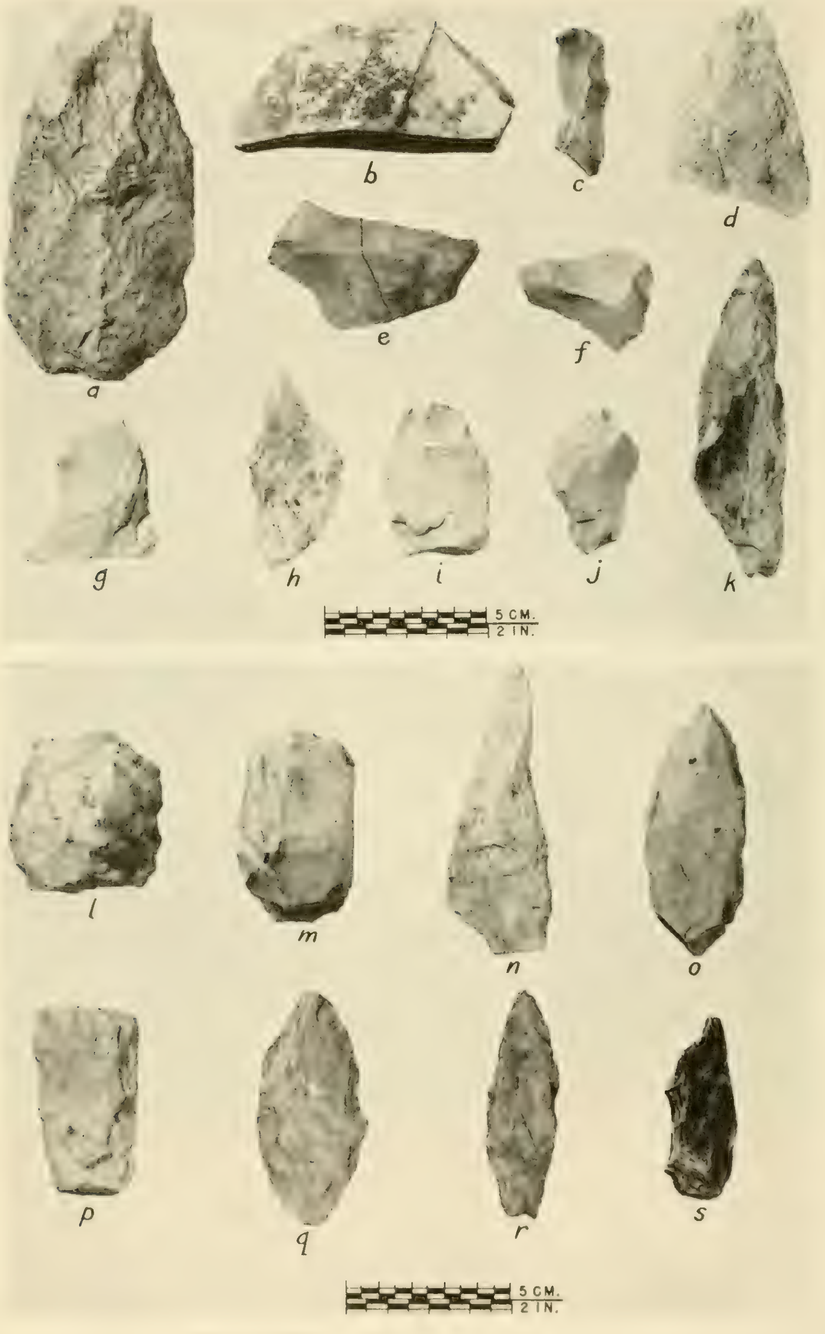
g
h
5 CM.
2 IN.

Series of small discoidal choppers from site 44Mc73.



Stone tools from site 44Mc66. *a*, Probably functioned as a grubbing tool; *b–d*, either choppers or hand axes.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5 CM.
2 IN.
l
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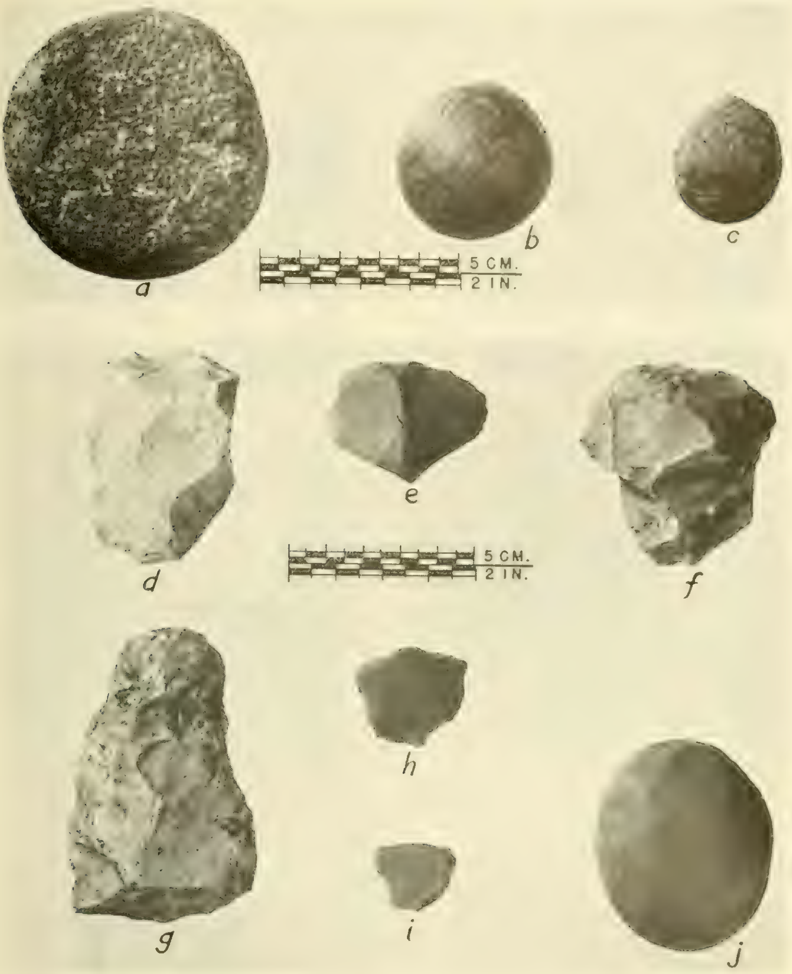
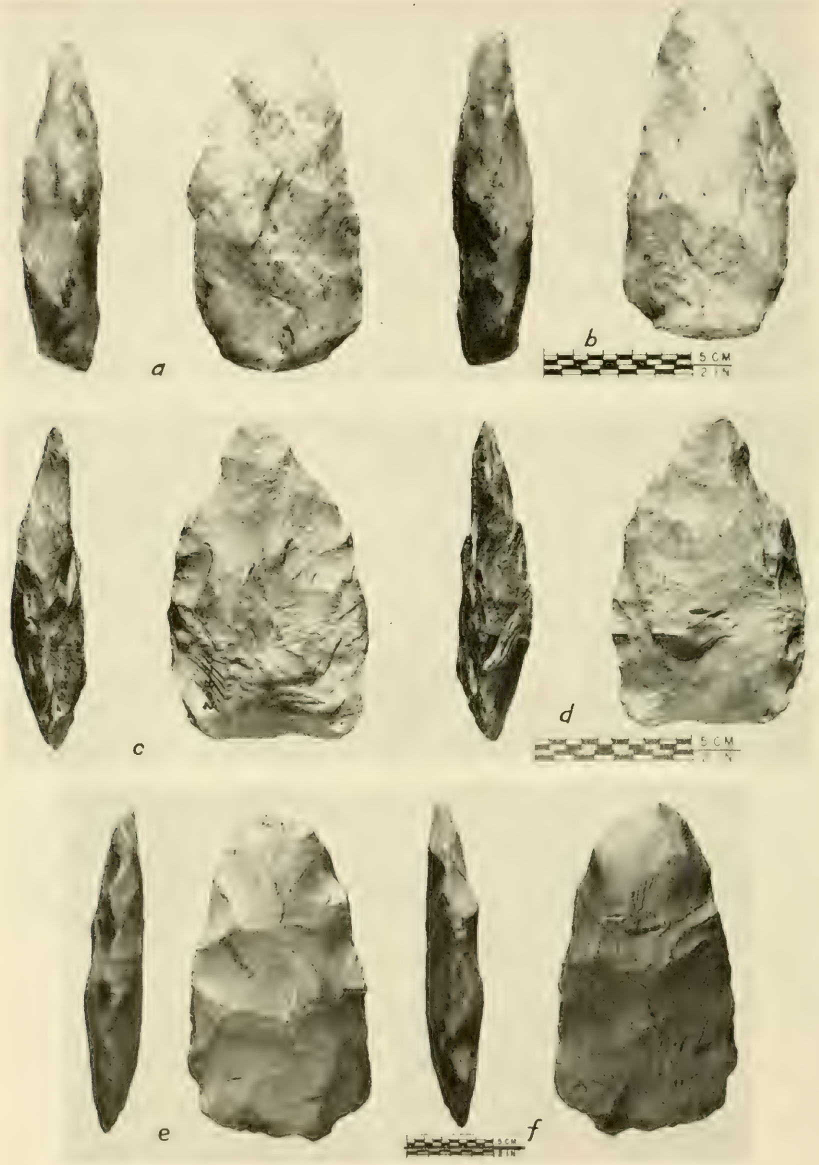
o
p
q
r
s
5 CM.
2 IN.

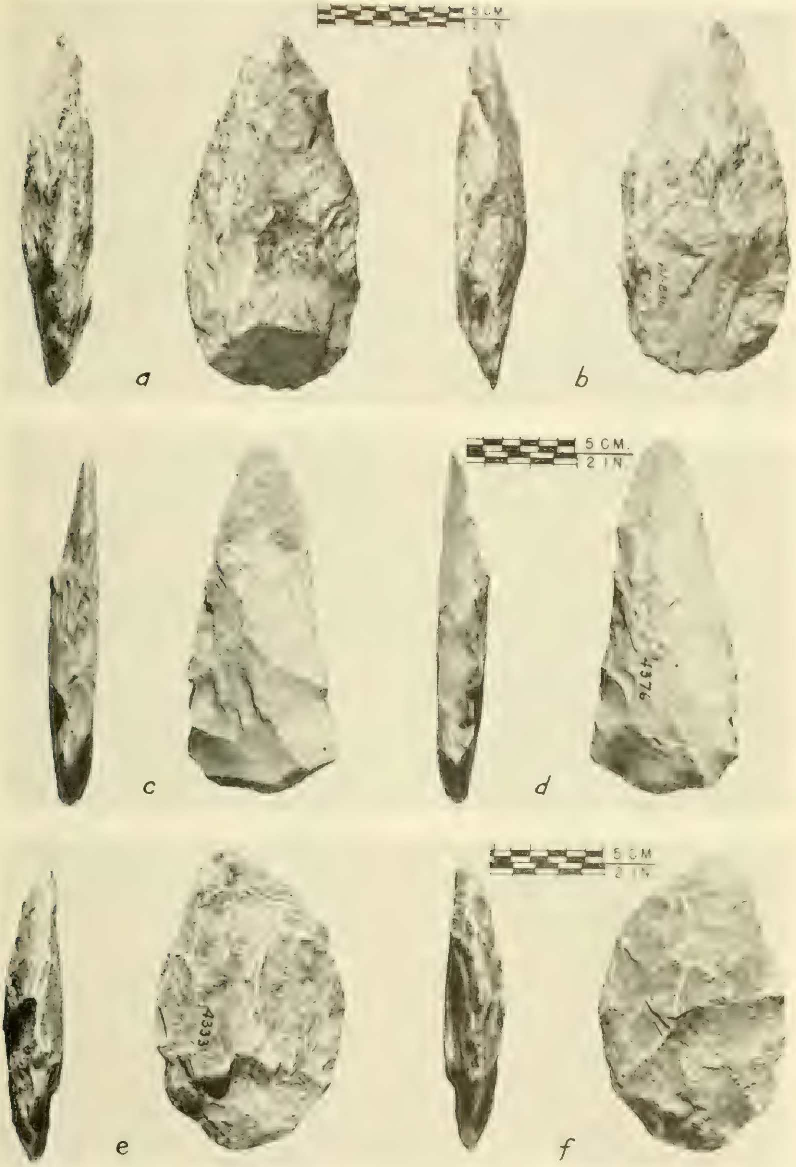
Stone tools from sites 44Mc66, 44Mc72, 44Mc73. *a*, Grubbing tool; *b*, hone; *c–j*, scrapers; *k*, *n*, *o*, *q*, *r*, knife blades; *l*, *m*, *p*, small chopping tools.


a
b
c
5 CM.
2 IN.
d
e
f
5 CM.
2 IN.
g
h
i
j

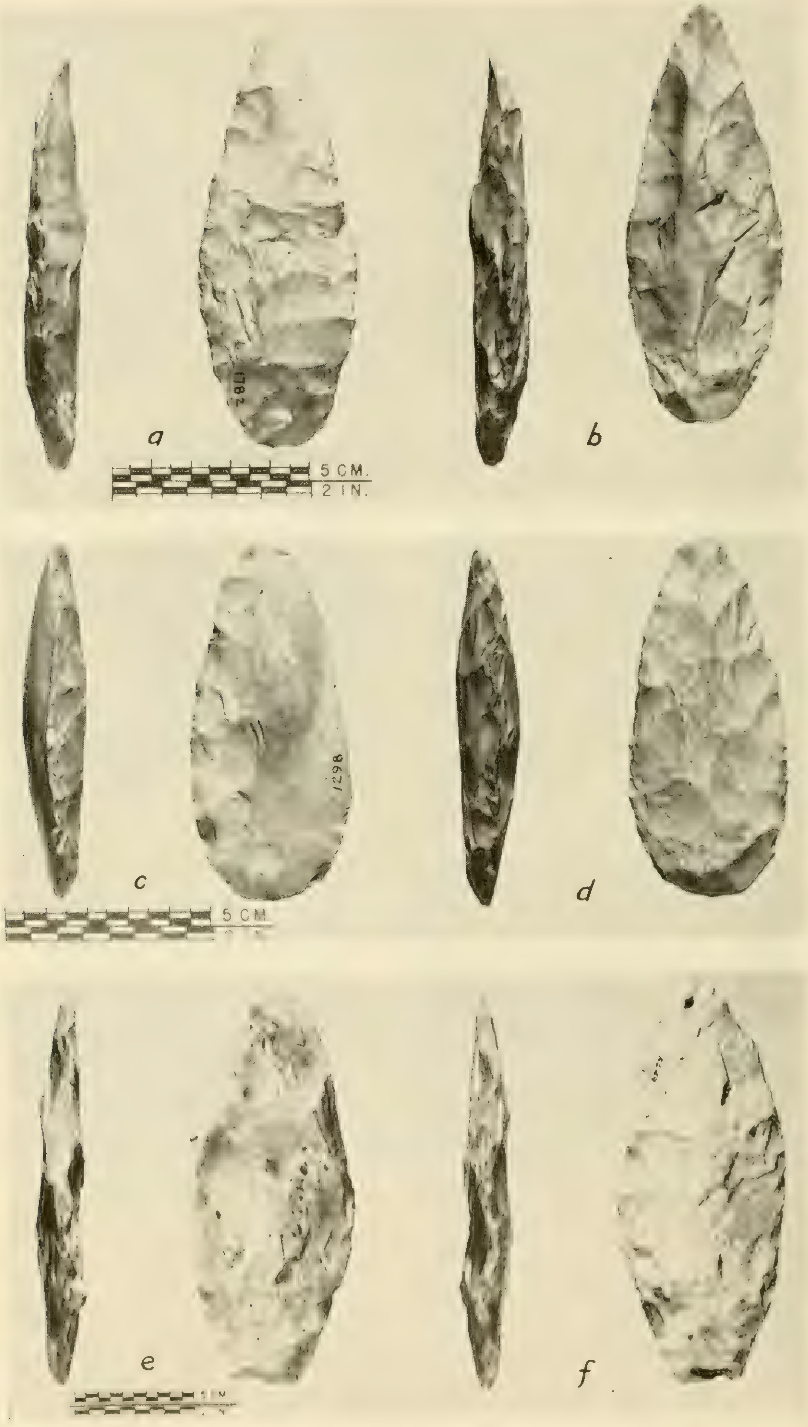
Stone specimens from site 44Mc66. *a*, Circular hammertone; *b*, *c*, magnetite balls; *d–i* scraper forms; *j*, faceted hammerstone.


a
b
5 CM
2 IN
c
d
5 CM
2 IN
e
f
5 CM
2 IN

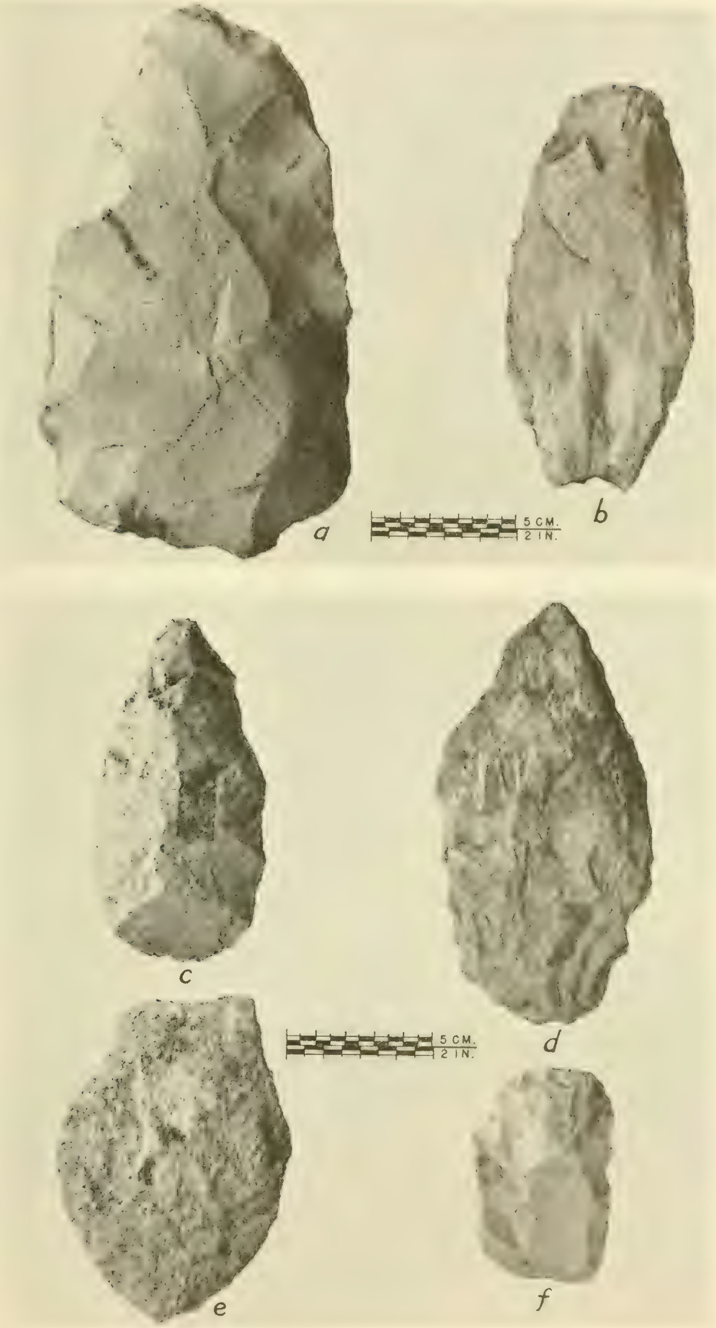
Stone tools from site 44Mc66. *a–f*, Front and side views of hand axes.


5 CM
2 IN
a
b
5 CM.
2 IN.
4376
c
d
5 CM
2 IN
4333
e
f

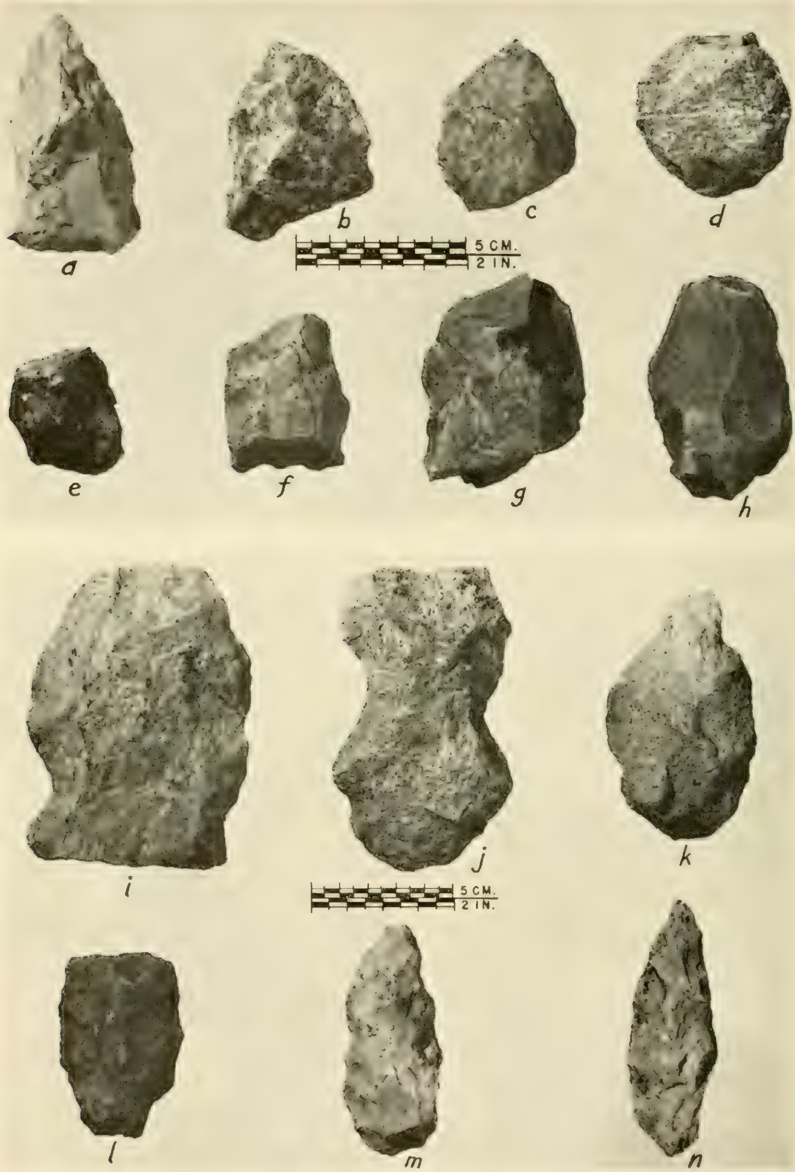
Stone tools from site 44Mc66. *a–f*, Front and side views of hand axes.


1782
a
b
5 CM.
2 IN.
1298
c
d
5 CM.
e
f

Stone specimens from site 44Mc66. *a–f*, Front and side views of stone axes.


a
5 CM.
2 IN.
b
c
d
5 CM.
2 IN.
e
f

Stone specimens from site 44Mc66. *a–d*, Hand axes; *e*, hafted grubbing tool; *f*, small chopper or cleaver.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5 CM.
2 IN.
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5 CM.
2 IN.
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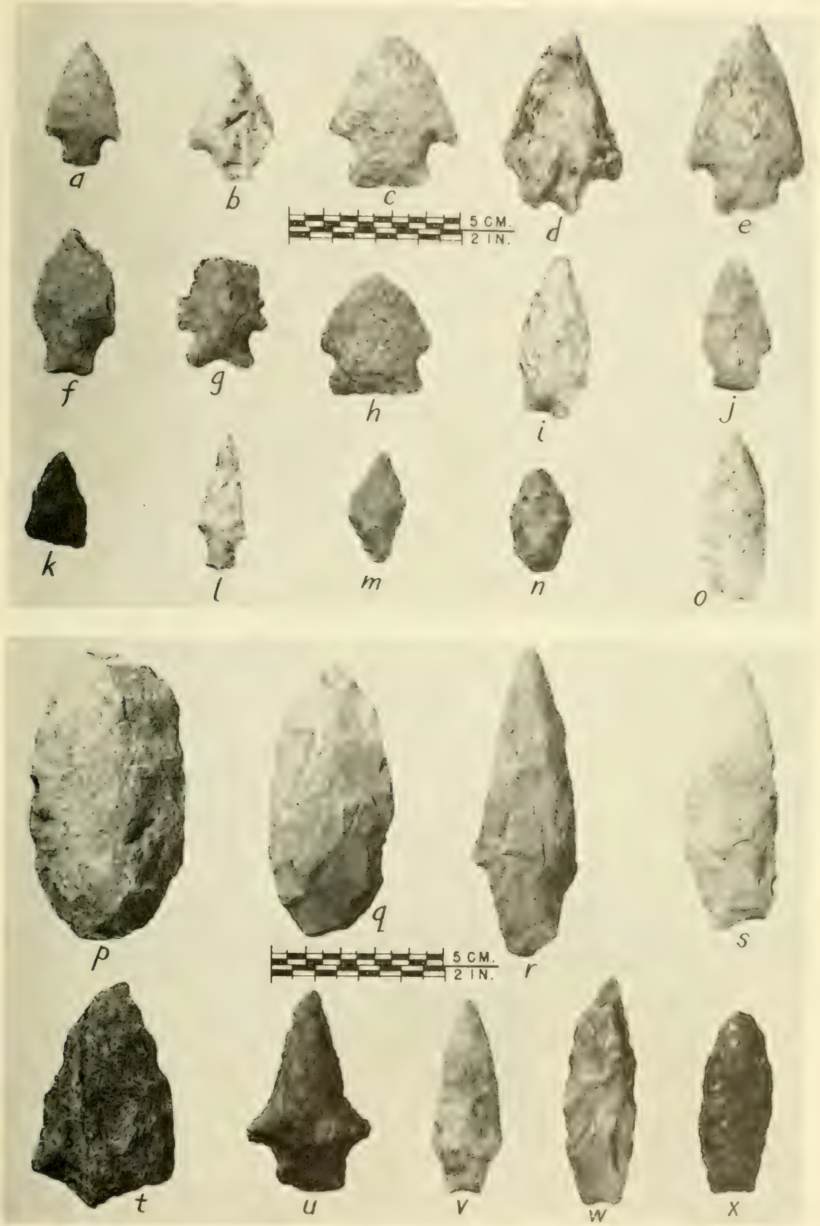
Stone specimens from site 44Mc66. *a–h*, Chopping tools; *i*, *j*, notched axes; *k*, hafted tool; *l–n*, crude projectile forms.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5 CM.
2 IN.
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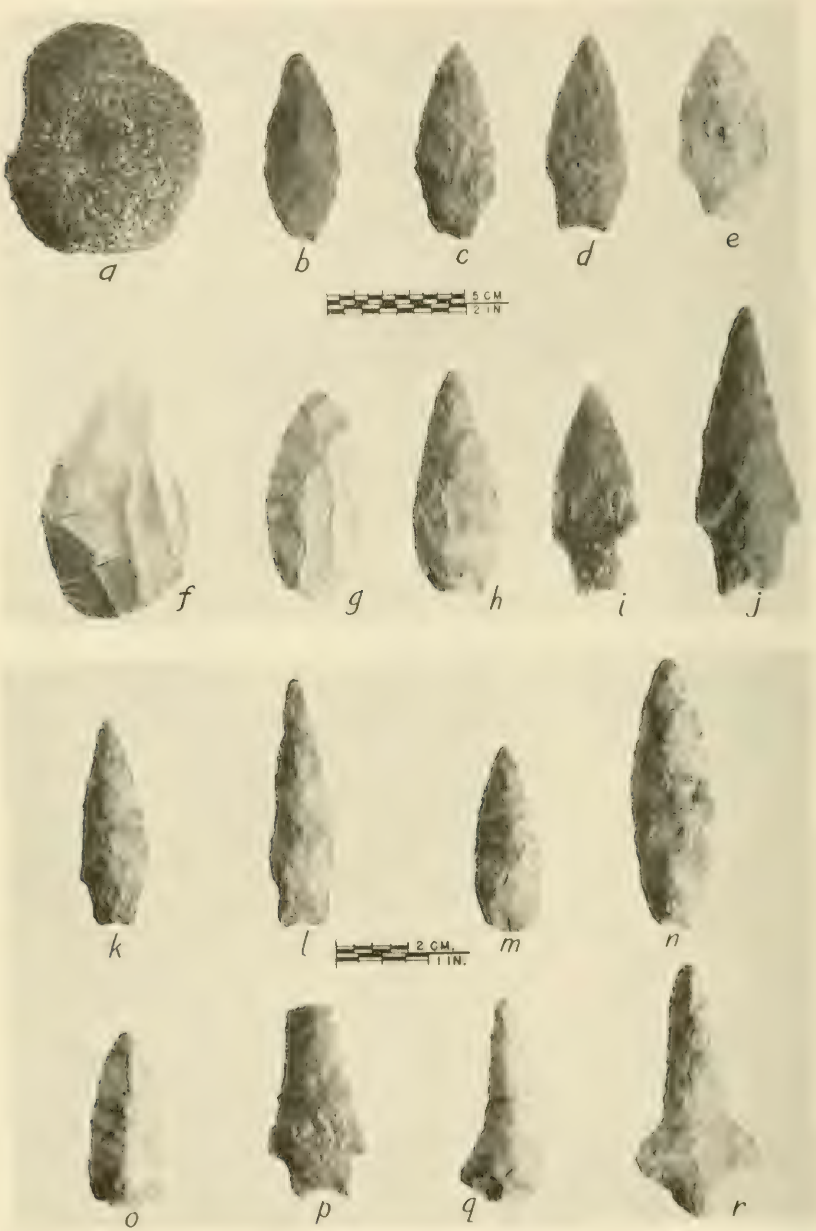
x

Stone specimens from site 44Mc66. *a–o*, Small projectile points; *p*, chopper; *q–s*, knife blades; *t–x*, large projectile points.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5 CM
2 IN
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2 CM.
1 IN.
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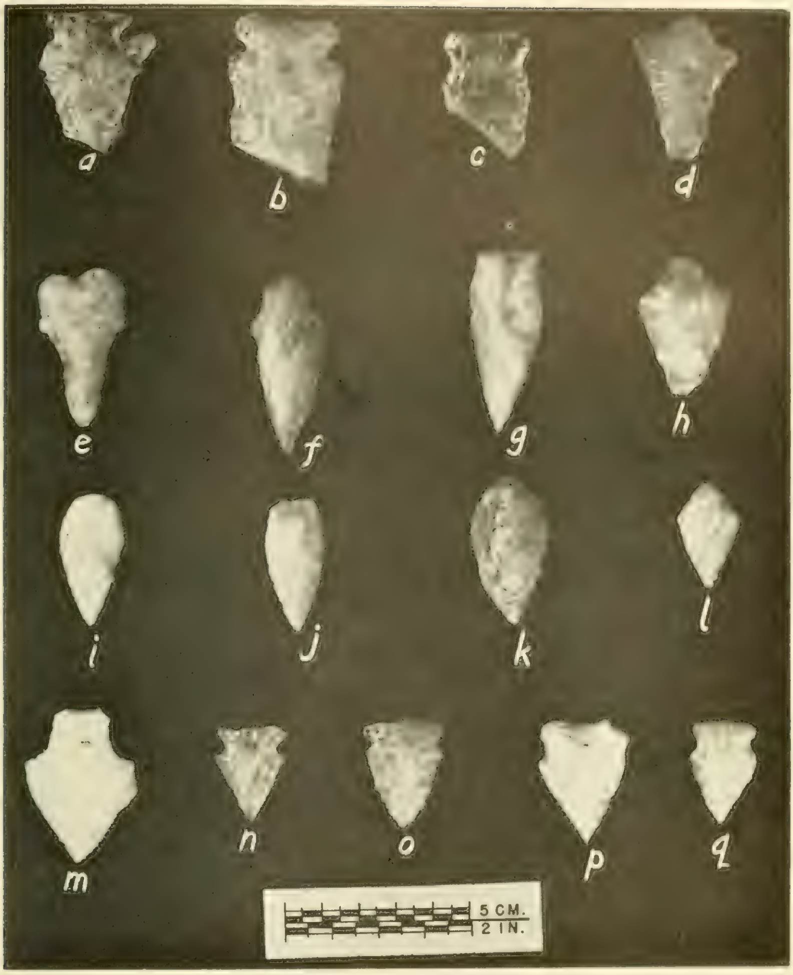
Stone specimens from site 44Mc66. *a*, Pitted hammerstone; *b–n*, projectile forms; *o*, keeled scraper; *p–r*, drills.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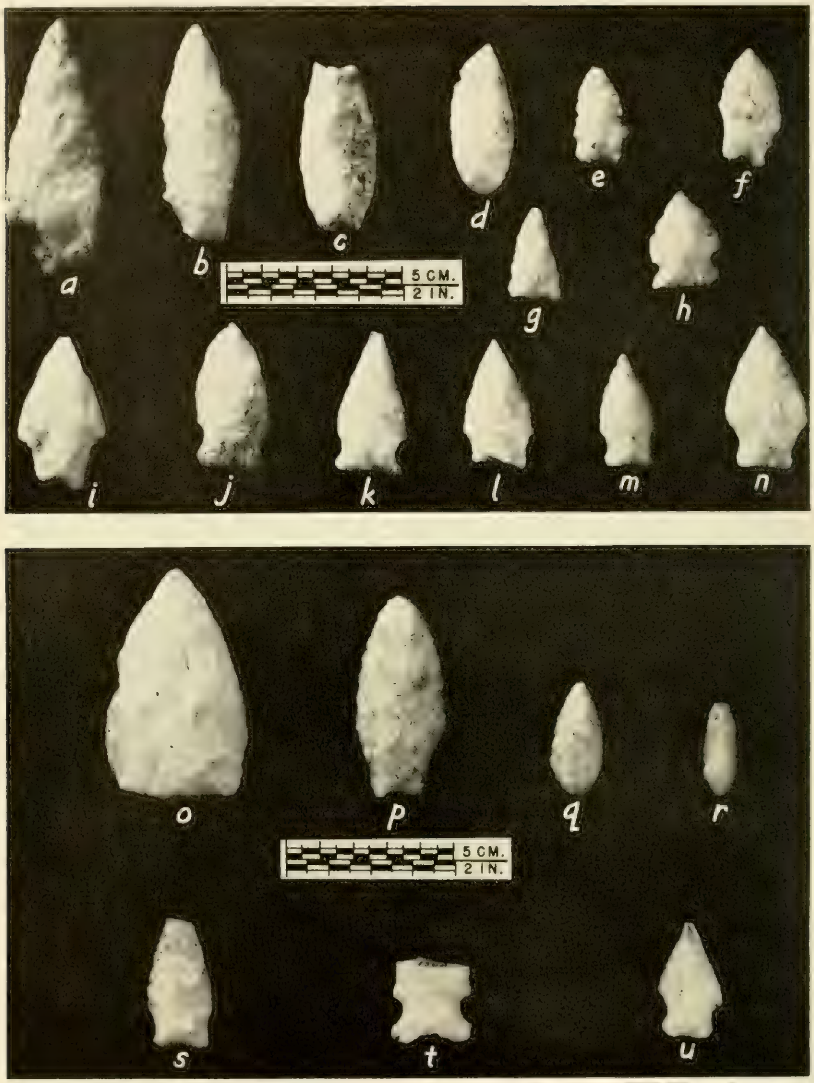
5 CM.
2 IN.

Stone specimens from site 44Mc66. *a–q*, Various types of quartz and quartz crystal projectile forms.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5 CM.
2 IN.
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5 CM.
2 IN.
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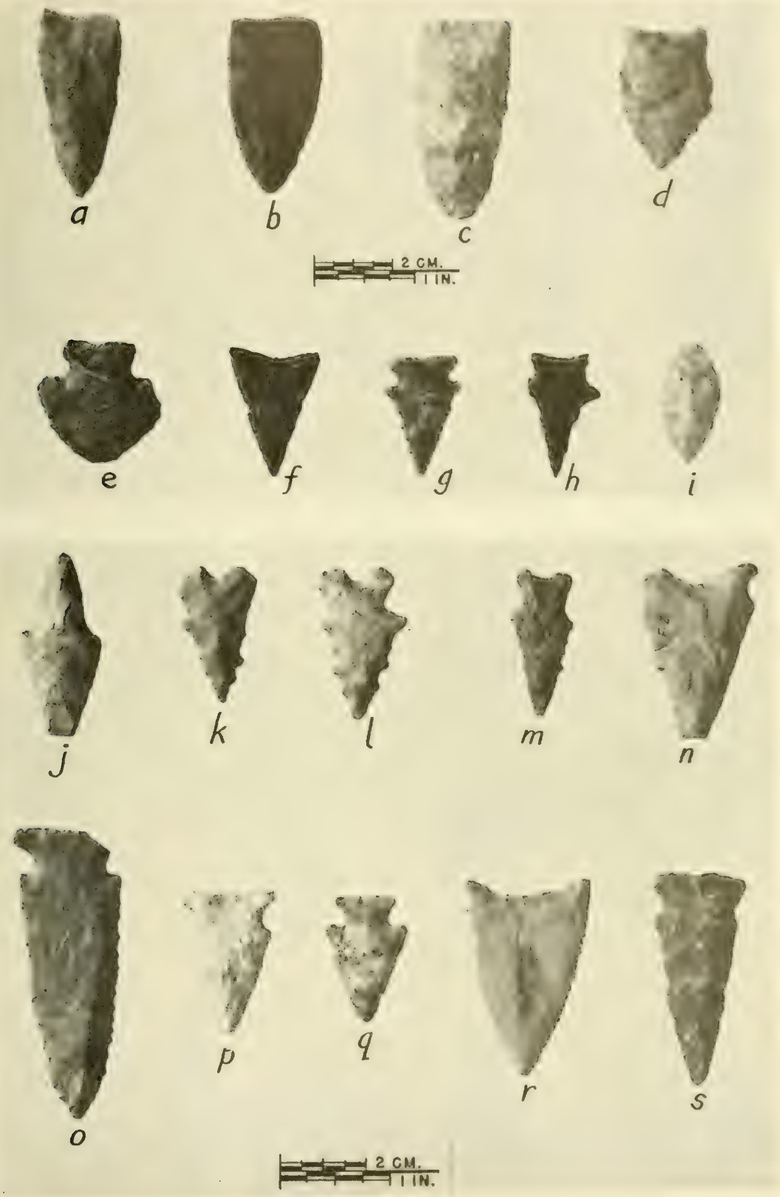
Stone specimens from site 44Mc73. *a–n*, *p*, *q*, *s*, *t*, *u*, Quartz and quartzite projectile forms; *o*, spear point; *r*, drill (?).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2 CM.
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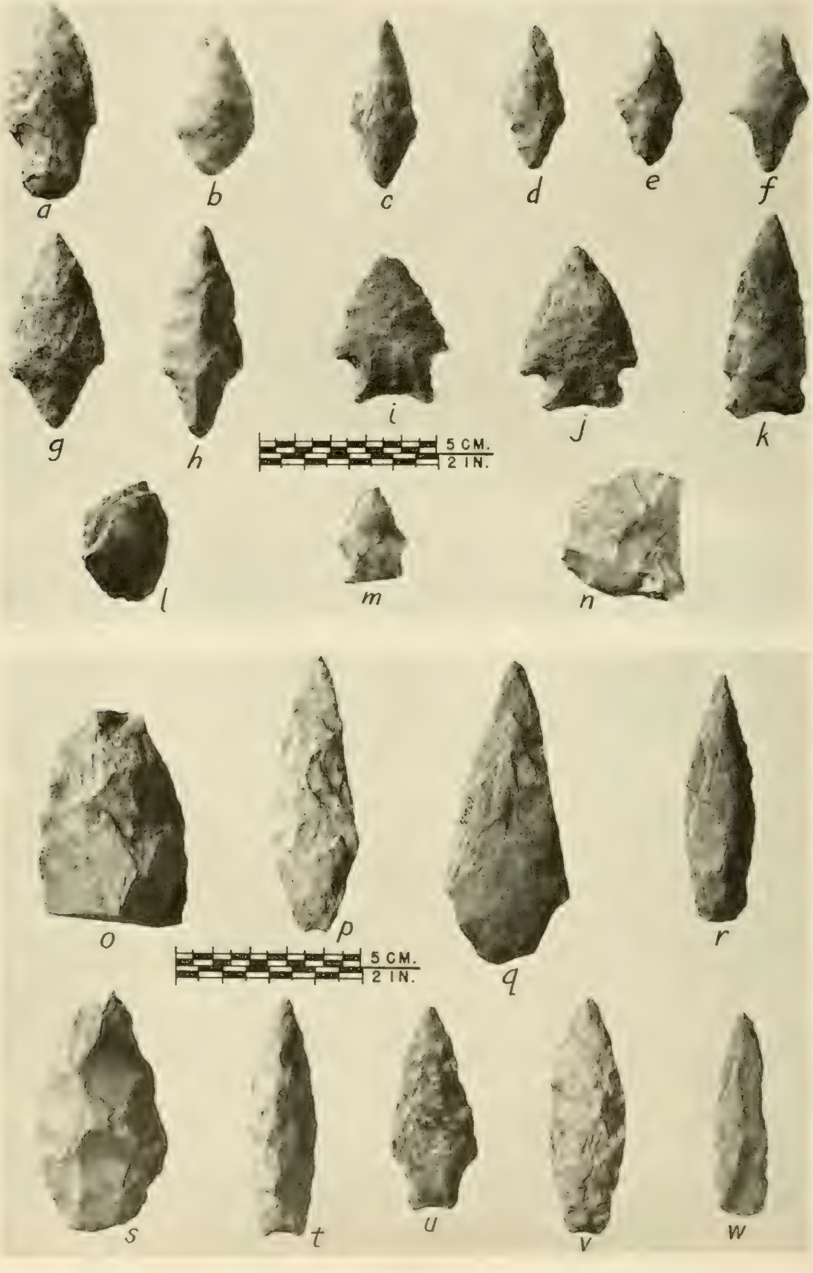
s
2 CM.
1 IN.

Stone specimens from site 44Mc75. *a–s*, Projectile points.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5 CM.
2 IN.
l
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q
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5 CM.
2 IN.
s
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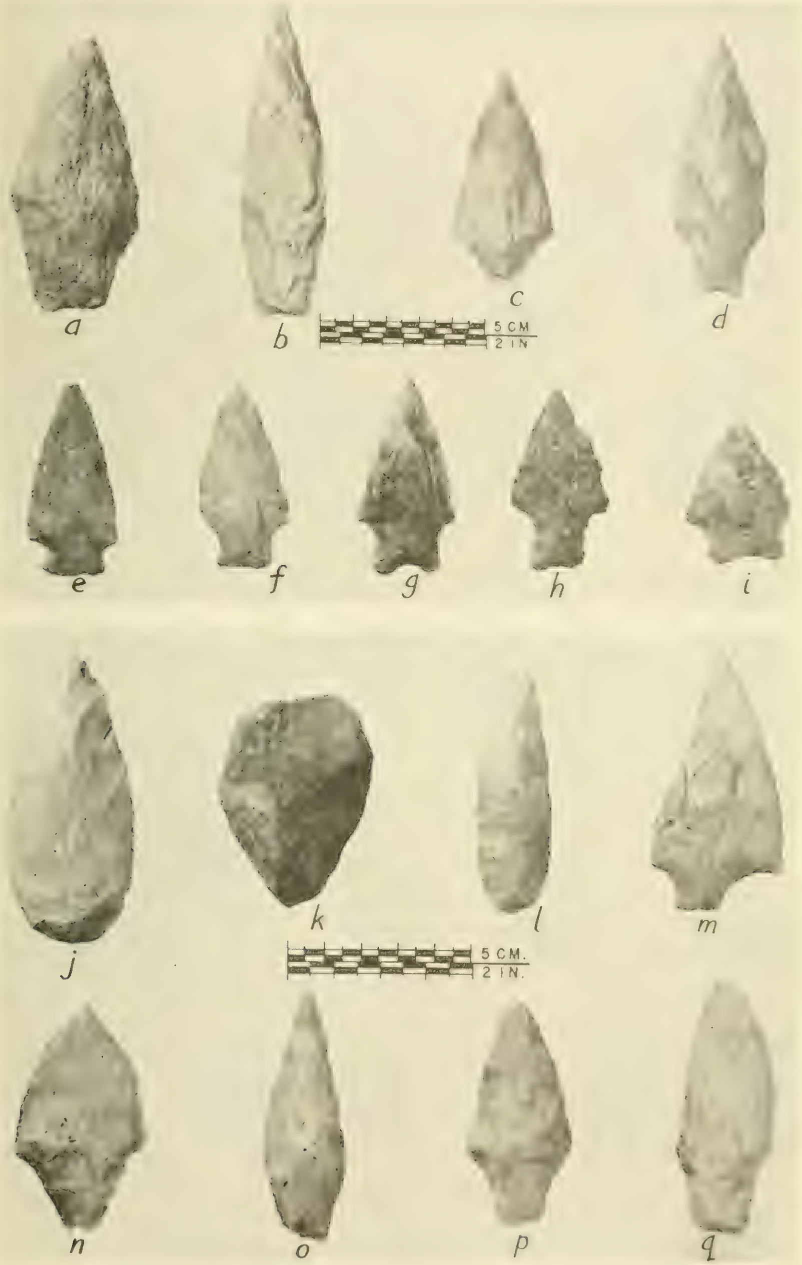
w

Stone specimens from site 44Mc75. *a–k, m, p–r, t–w,* Projectile forms; *l, n,* scrapers; *o,* fragmentary chopper; *s,* chopper with graver tip.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5 CM
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5 CM.
2 IN.
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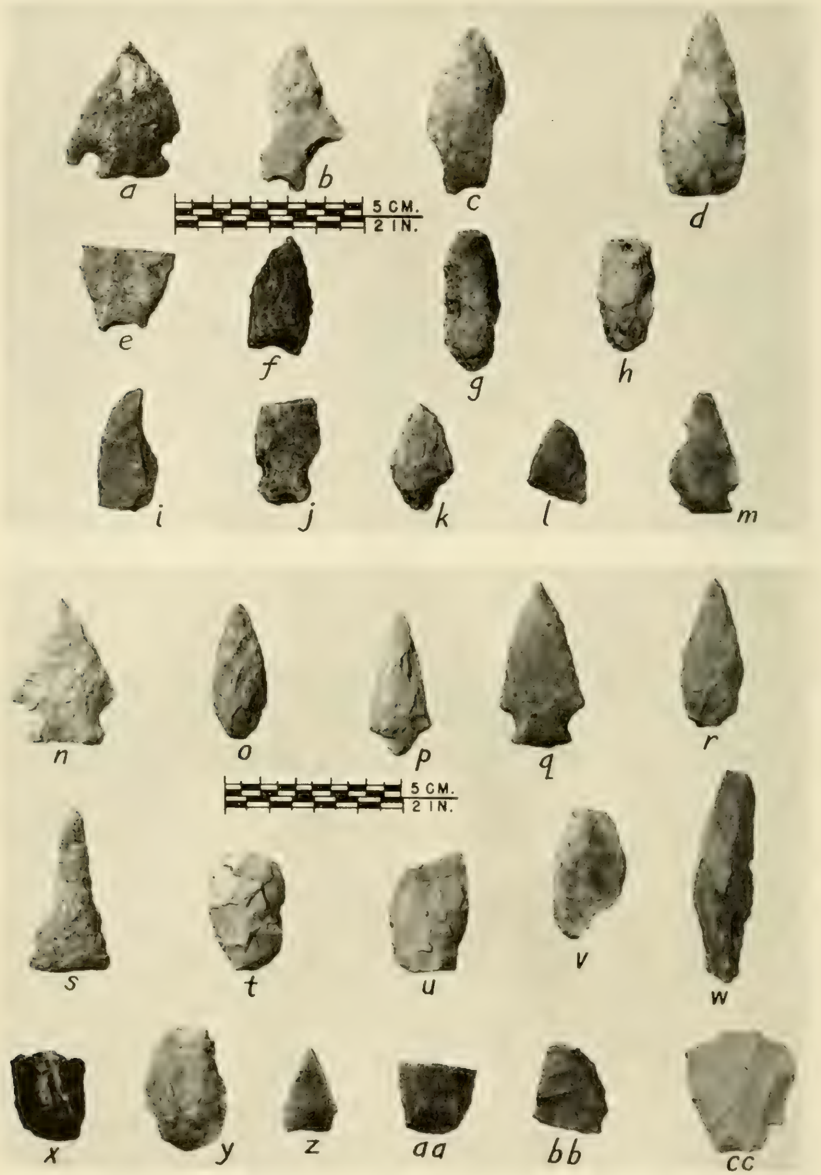
Stone specimens from site 44Mc75. Various types of Archaic projectile points.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5 CM.
2 IN.
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5 CM.
2 IN.
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aa
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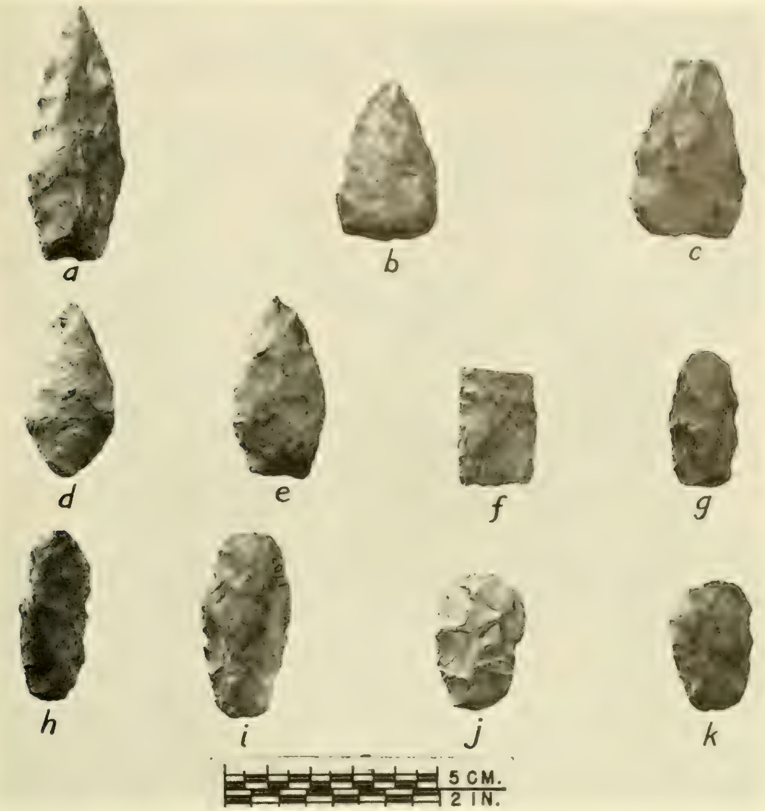
Stone specimens from site 44Mc75.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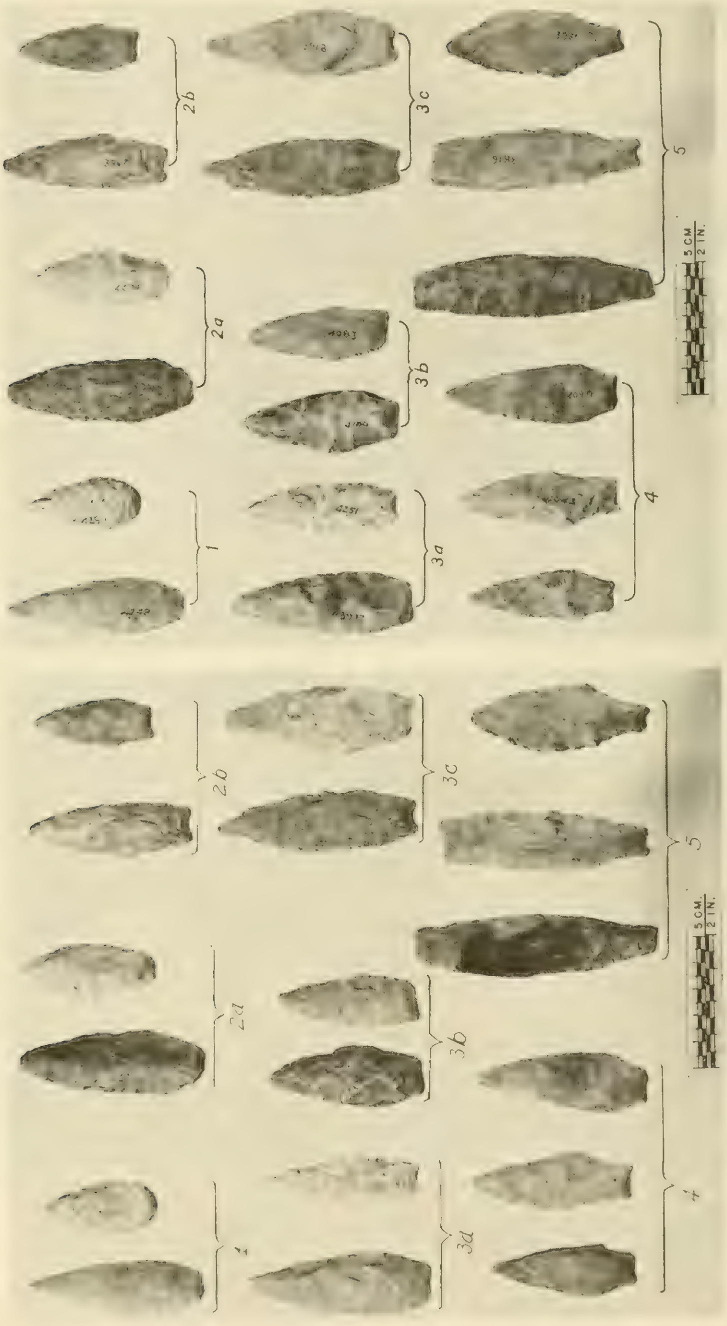
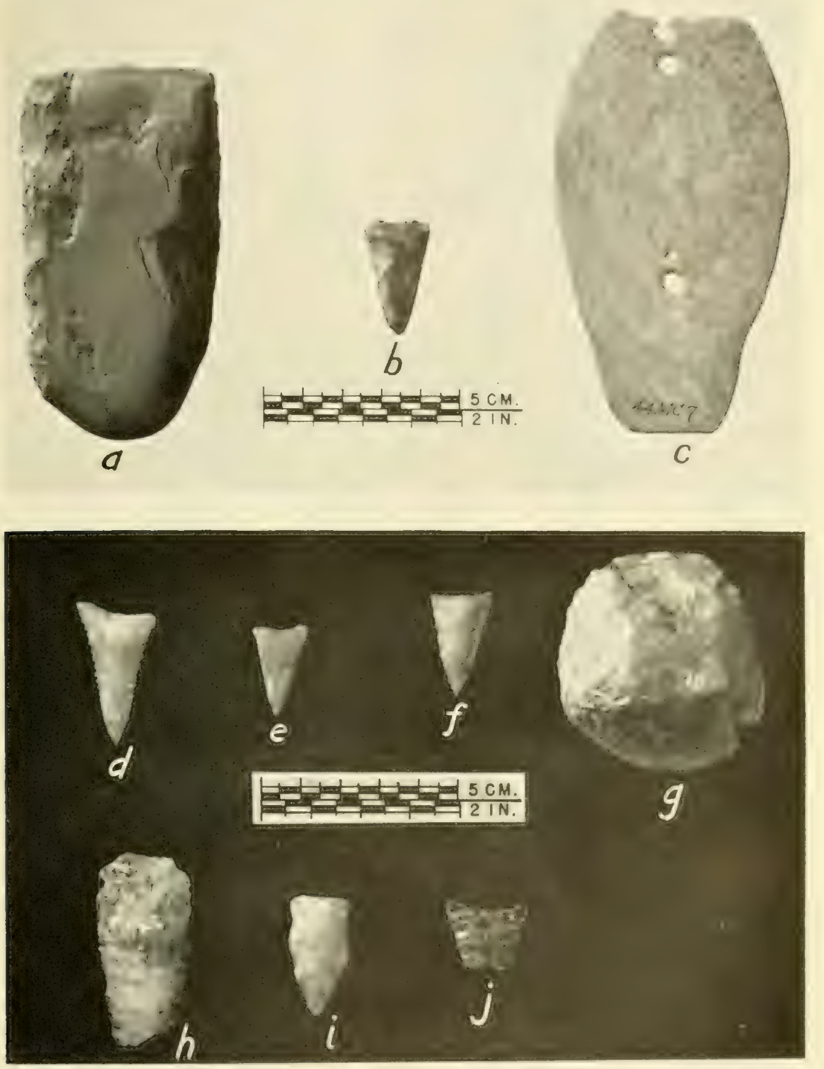
j
k
5 CM.
2 IN.

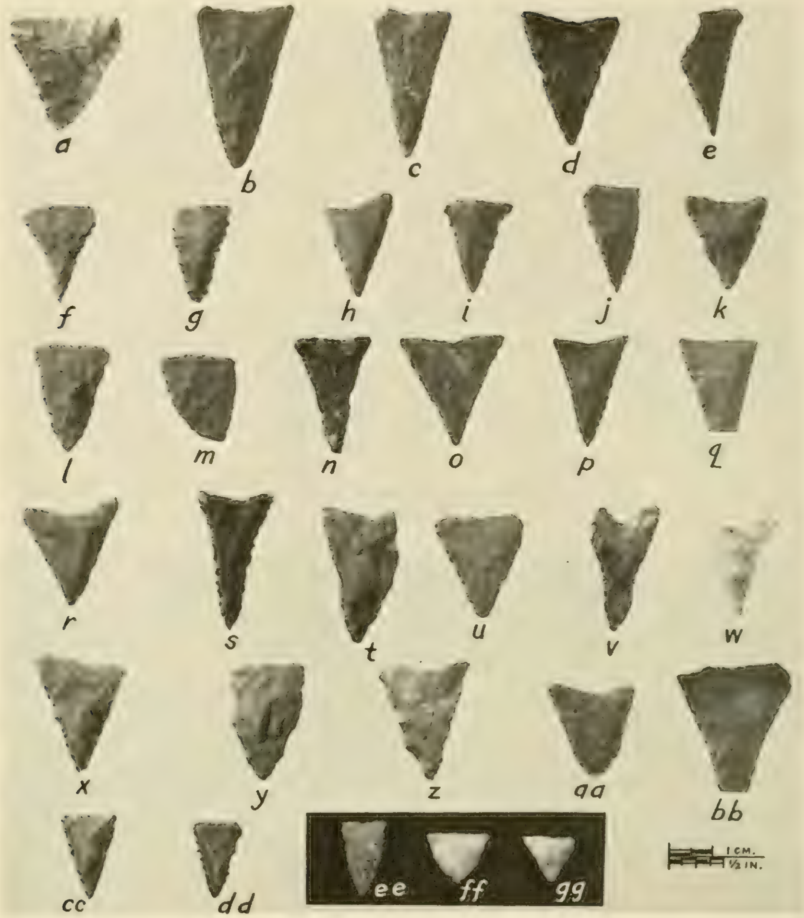
Stone artifacts recovered from site 44Mc66. *a–f*, Projectile forms; *g–k*, flaking tools or "fabricators," according to Evans (1897).


2b
3c
5
2a
3b
1
3a
4
5 CM.
2 IN.
2b
3c
5
2a
3b
1
3d
4
5 CM.
2 IN.

Early series of projectile points from the Bluestone drainage. Both surfaces are shown to illustrate that one surface has been more carefully chipped than the reverse surface.



Stone specimens from site 44Mc7. *a*, Stone hoe made from a natural thin slab chipped on the sides and blade surface; *b* isosceles triangular projectile point whose sides have been smoothed by rubbing; *c*, expanding center bar gorget; *d–f*, *j*, quartz and quartzite isosceles triangular projectile points with and without serrated edges; *g*, quartzite nodule scraper; *h*, *i*, stemmed quartzite projectile forms.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x
y
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aa
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ee
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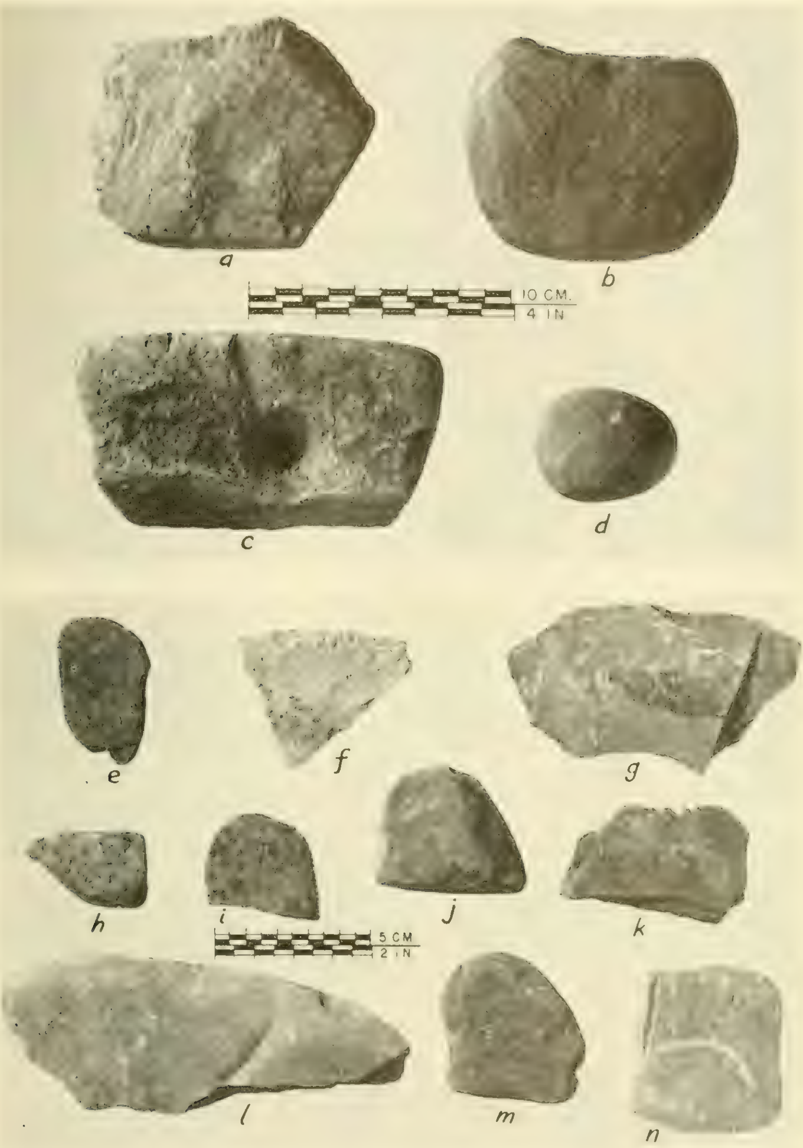
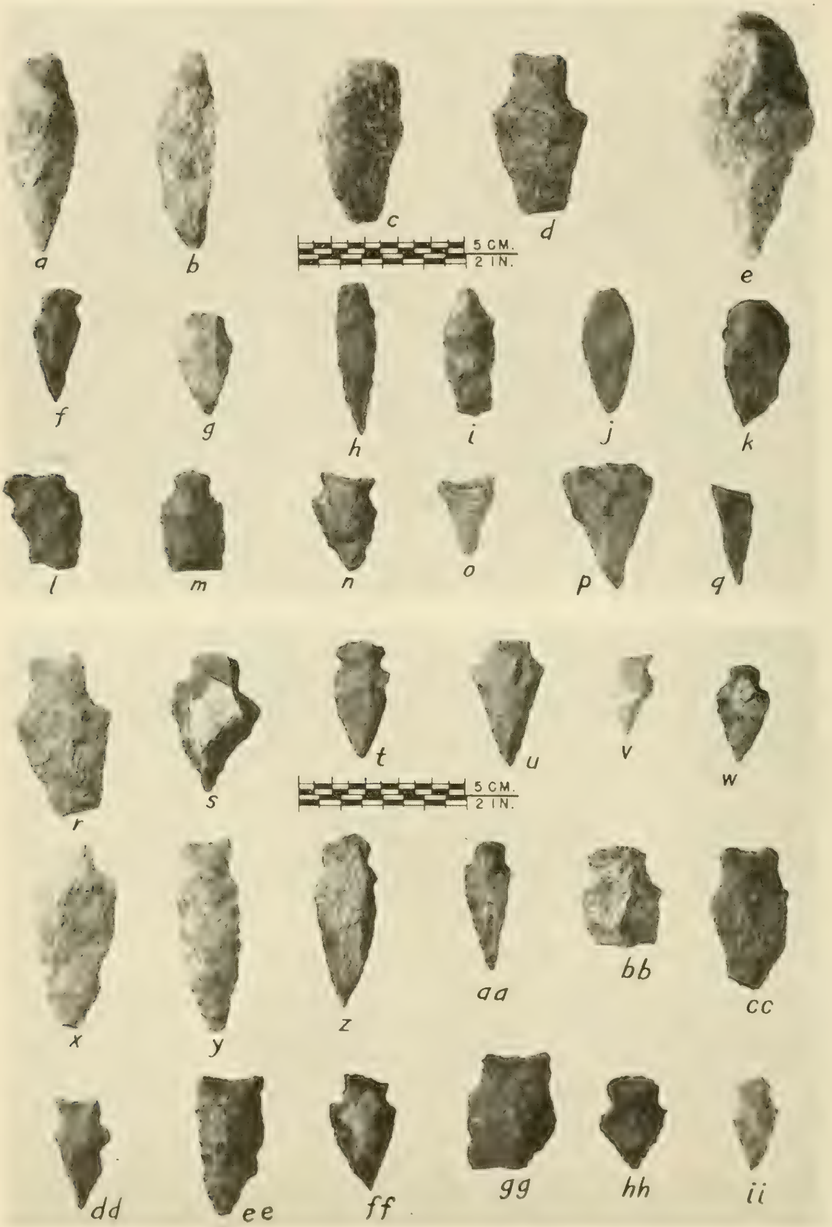
gg
1 CM.
½ IN.

Various types of isosceles triangular points found in site 44Mc14, Clarksville site, to illustrate series.



Stone specimens from site 44Ha7. *a–d,* Hammerstones; *a, c,* cup depressions on one or both faces; *e, h, j, m,* and *n,* probable potter's tools; *f, g, l,* choppers or scrapers; *i,* with one edge finely serrated may be the tool used to give the combed effect to both exterior and interior surfaces of clay vessels; *k,* stone saw.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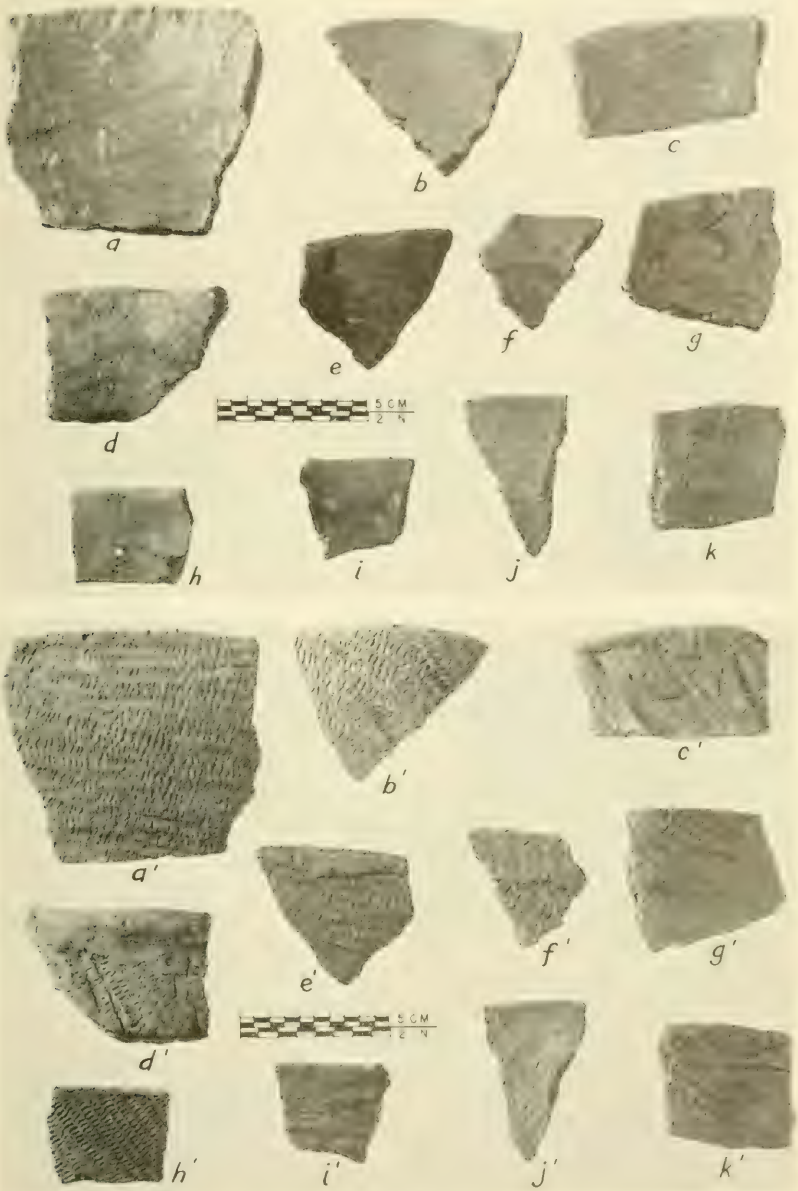
hh
ii

Various types of projectile points from site 44Ha7.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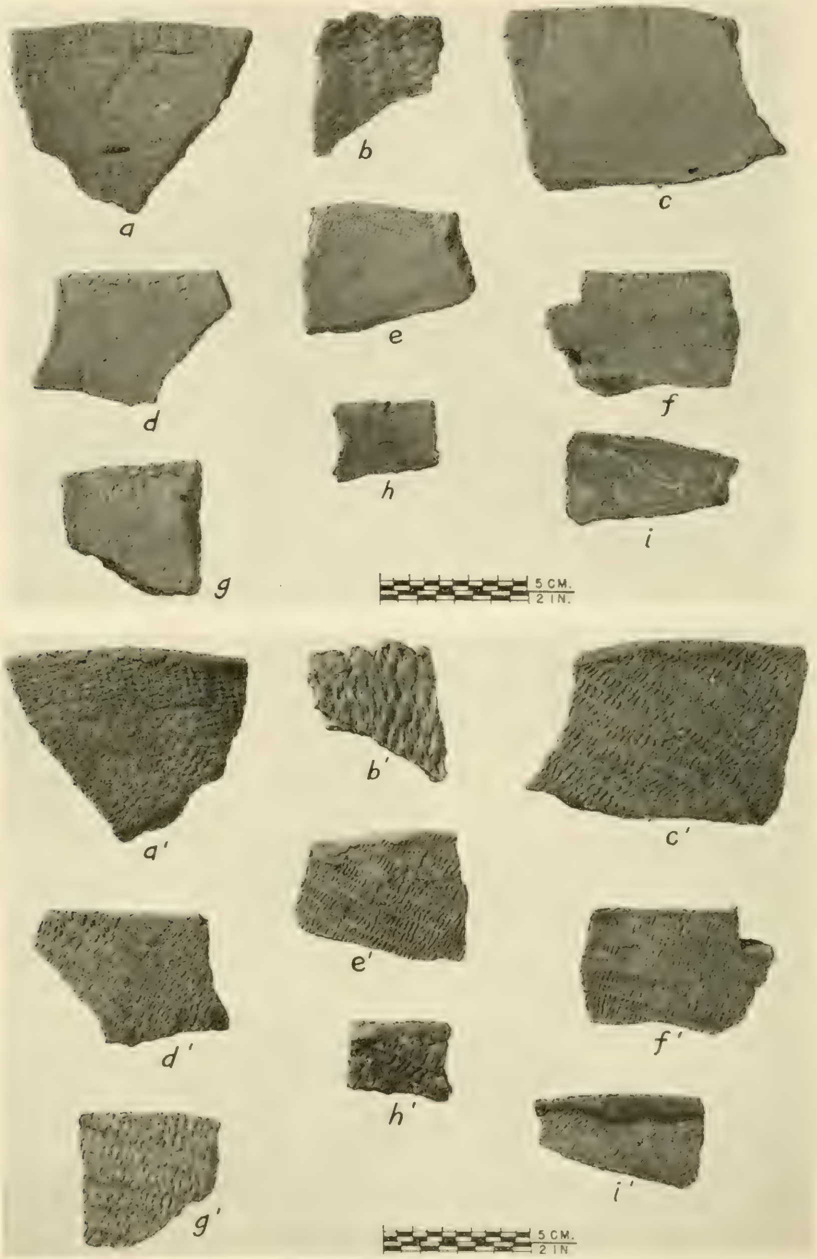
Ceramic remains from site 44Ha7 showing both the interior and exterior surface treatments. All are rim sherds.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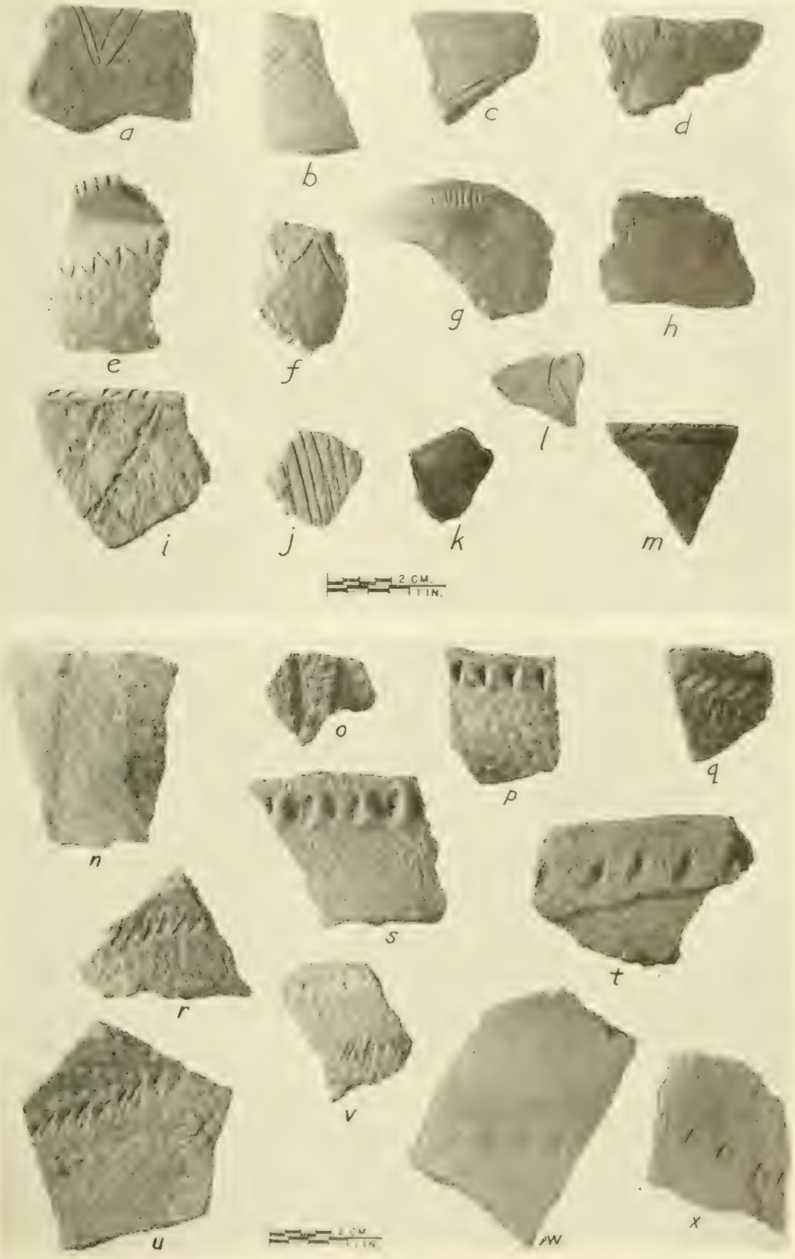
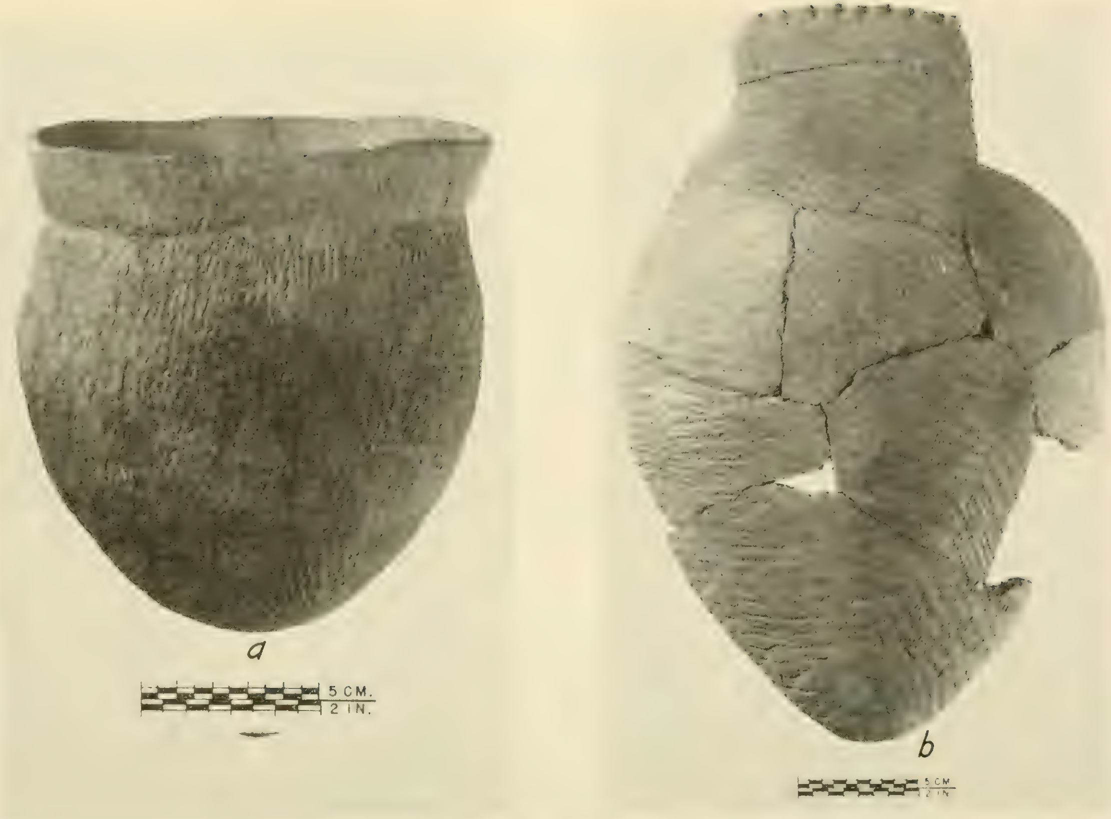
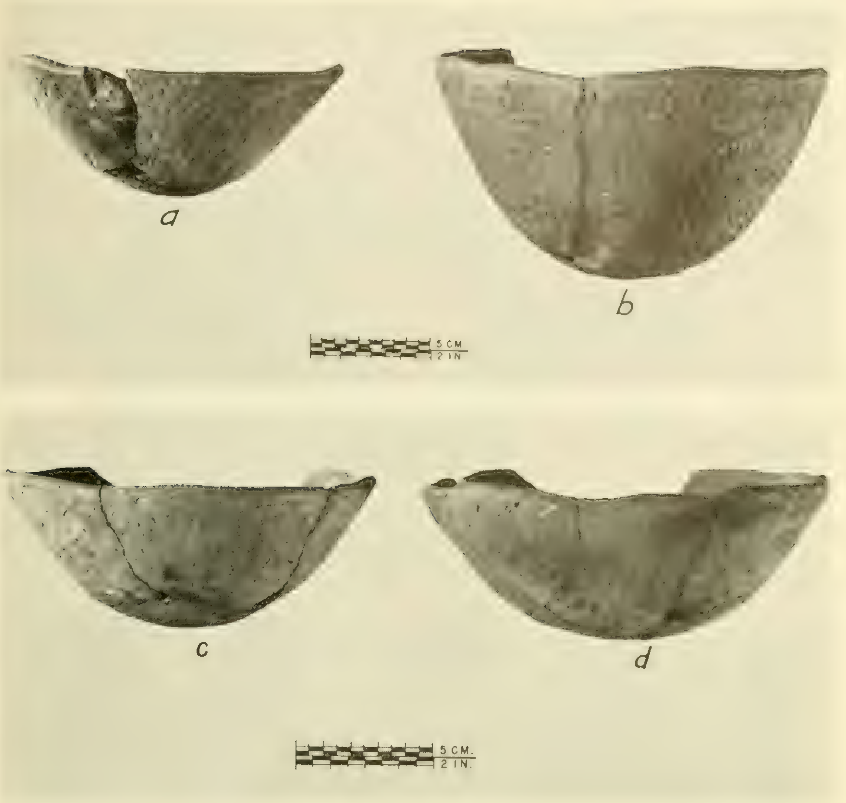
Ceramic remains from site 44Ha7 showing both the interior and exterior surface treatments. All are rim sherds.



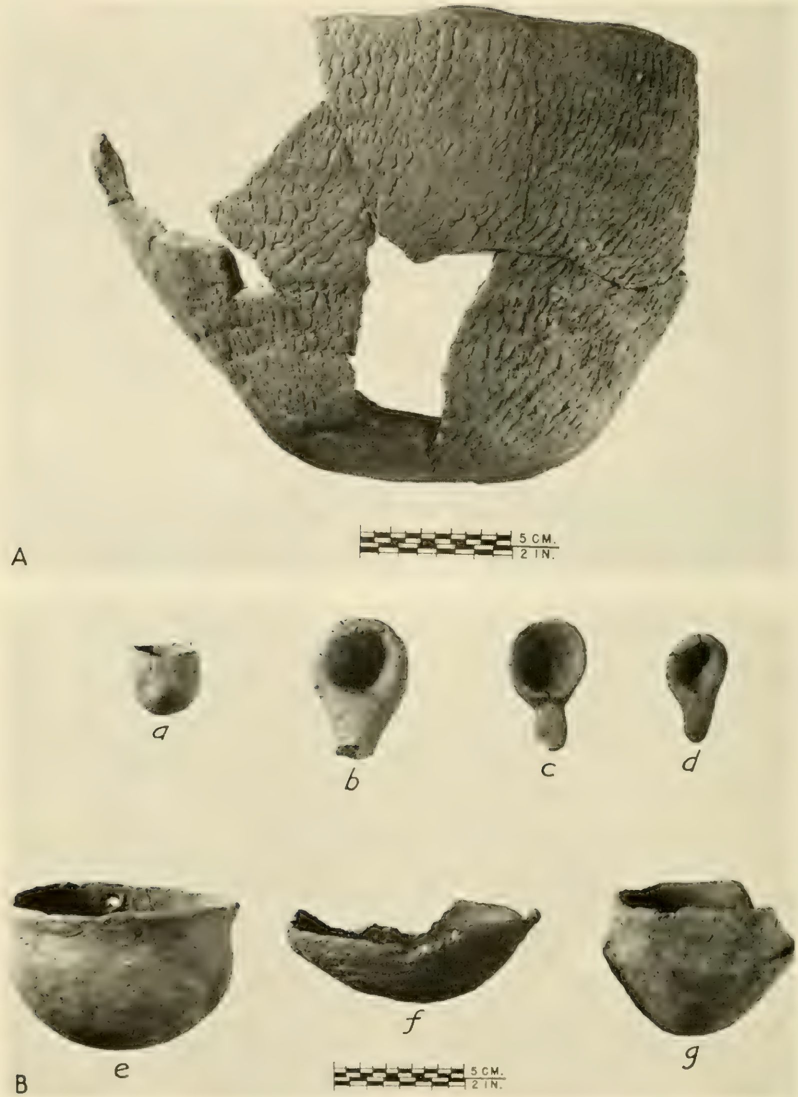
Sherd material from site 44Mc14, Clarksville site. *a–h, i, k, l,* and *m,* Types of incising used on plain ware occurring at the rim or neck sections of vessels; *j,* Clarksville Cord-wrapped Paddled; *n o,* traces of parallel lines of dim black paint occurring as vertical stripes on vessels; *p–x,* types of pinching or indenting found on rim or at the base of neck sections of the Clarksville Series.



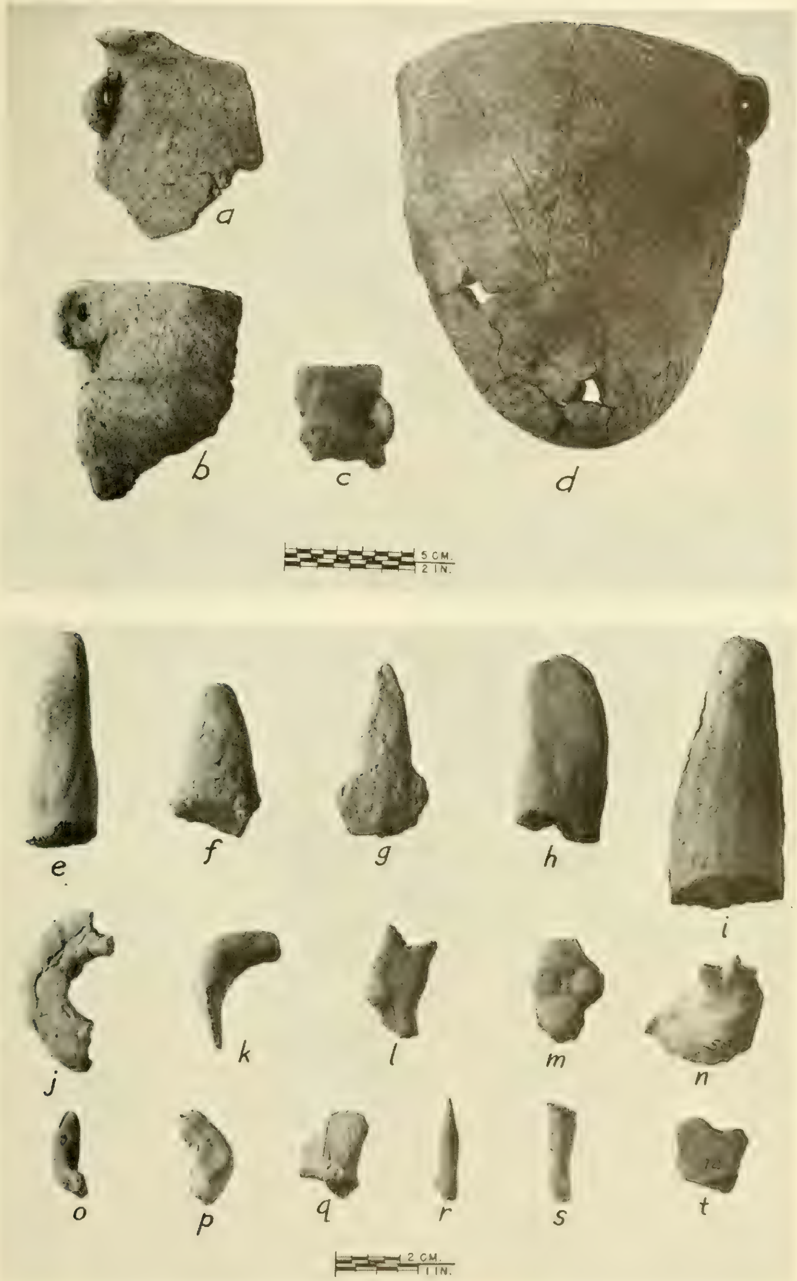
Complete and restored vessels from site 44Mc14. *a*, Late Woodland vessel covered with cord-wrapped paddled surface; *b*, large jar covered with fabric impressed surface.



Partially restored vessels from site 44Mc14, Clarksville site. *a–d*, Illustrating the various shapes used in the construction of bowls.



Ceramic specimens from site 44Mc14, Clarksville site. A, Partially restored flat based bowl from earliest horizon within the site. B, *a–d*, miniature dipper forms; *e–g*, miniature vessel forms.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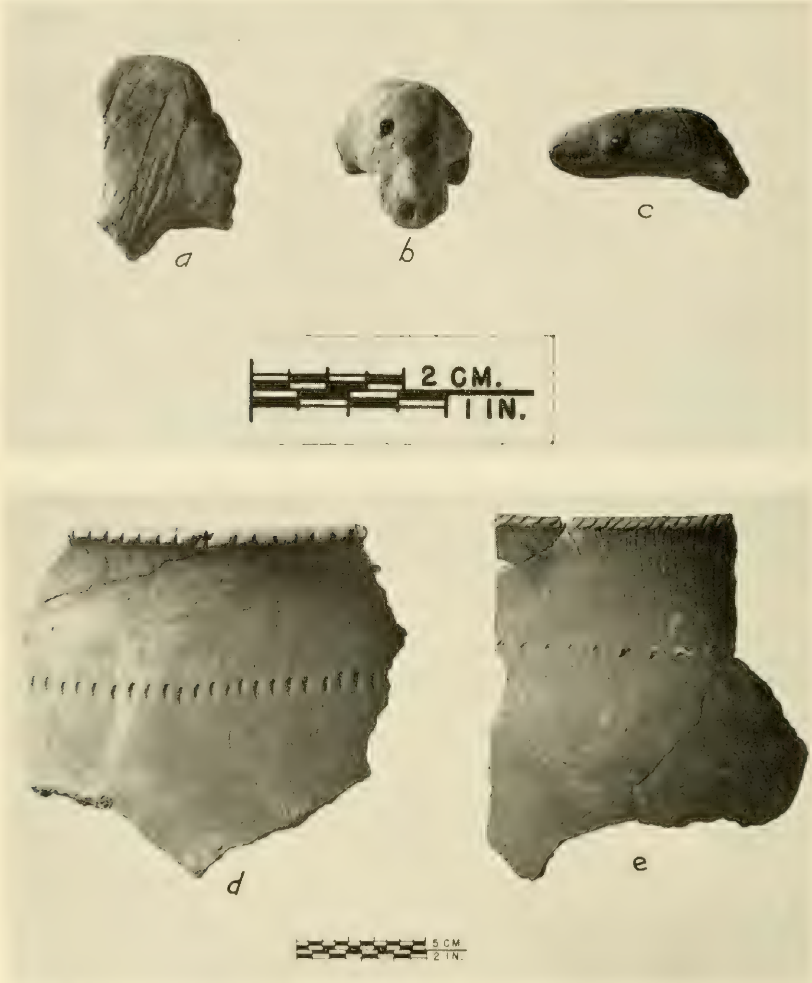
2 CM.
1 IN.

Ceramic remains from site 44Mc14, Clarksville site. *a–d*, Partially restored portions of vessels having vertical lug handles; *e–i*, various types of dipper handles; *j*, *l–n*, *p*, *r–t*, miscellaneous bits some of which were probably handles; *k*, *o*, *q*, adornos.


a
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2 CM.
1 IN.
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e
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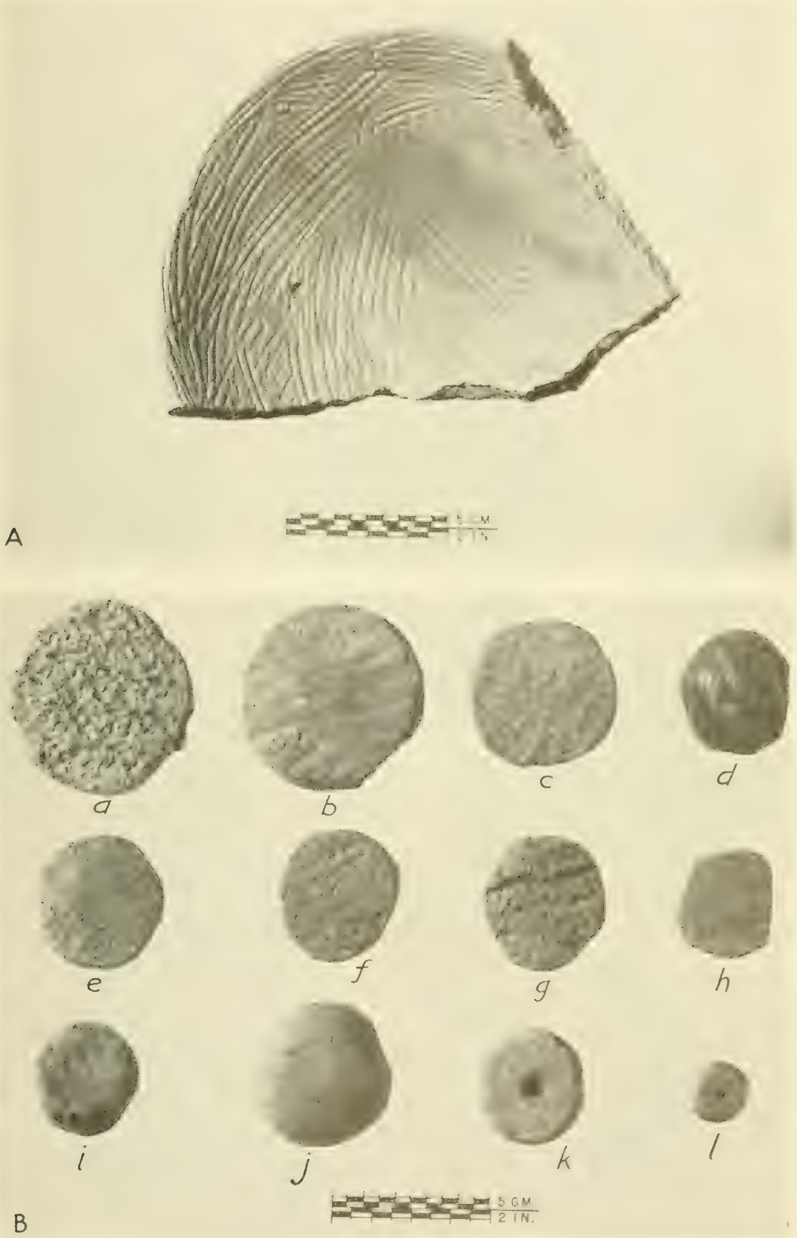
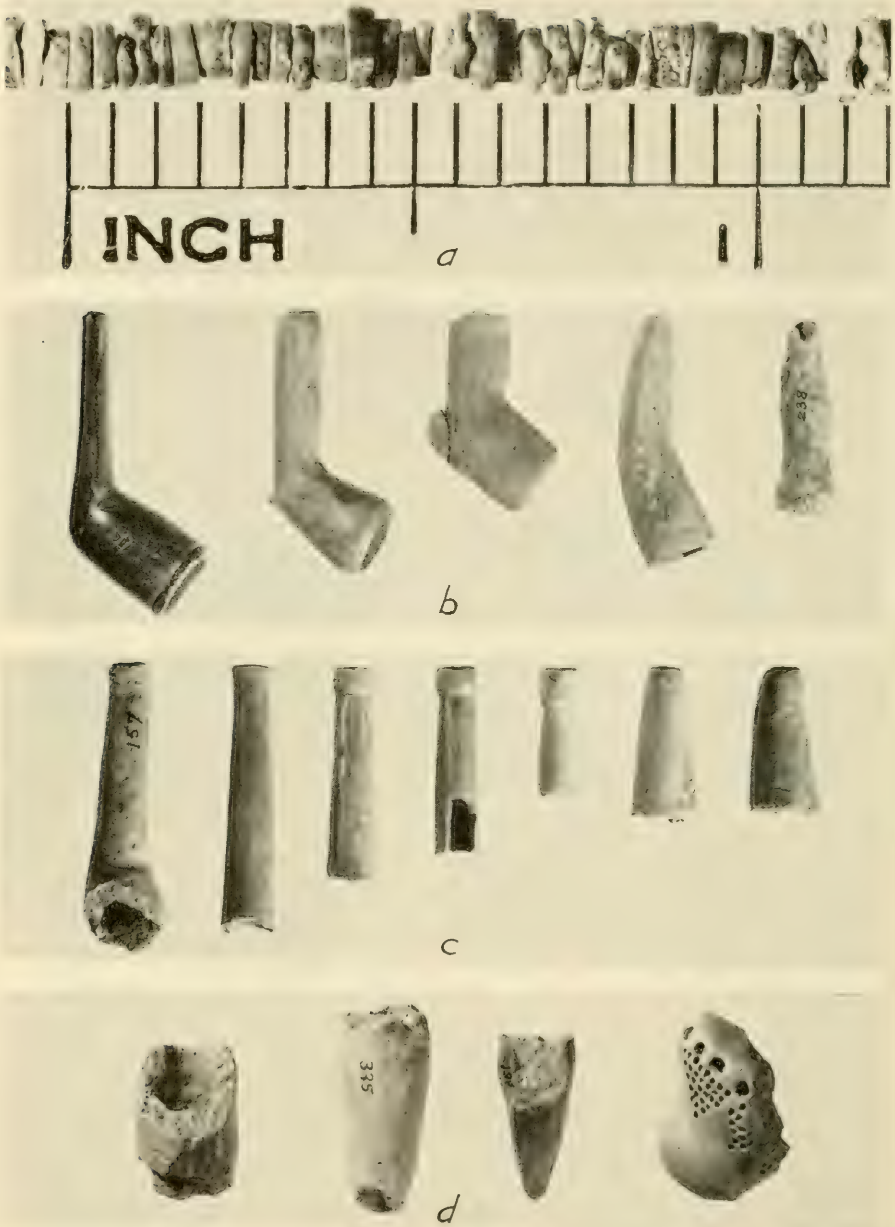
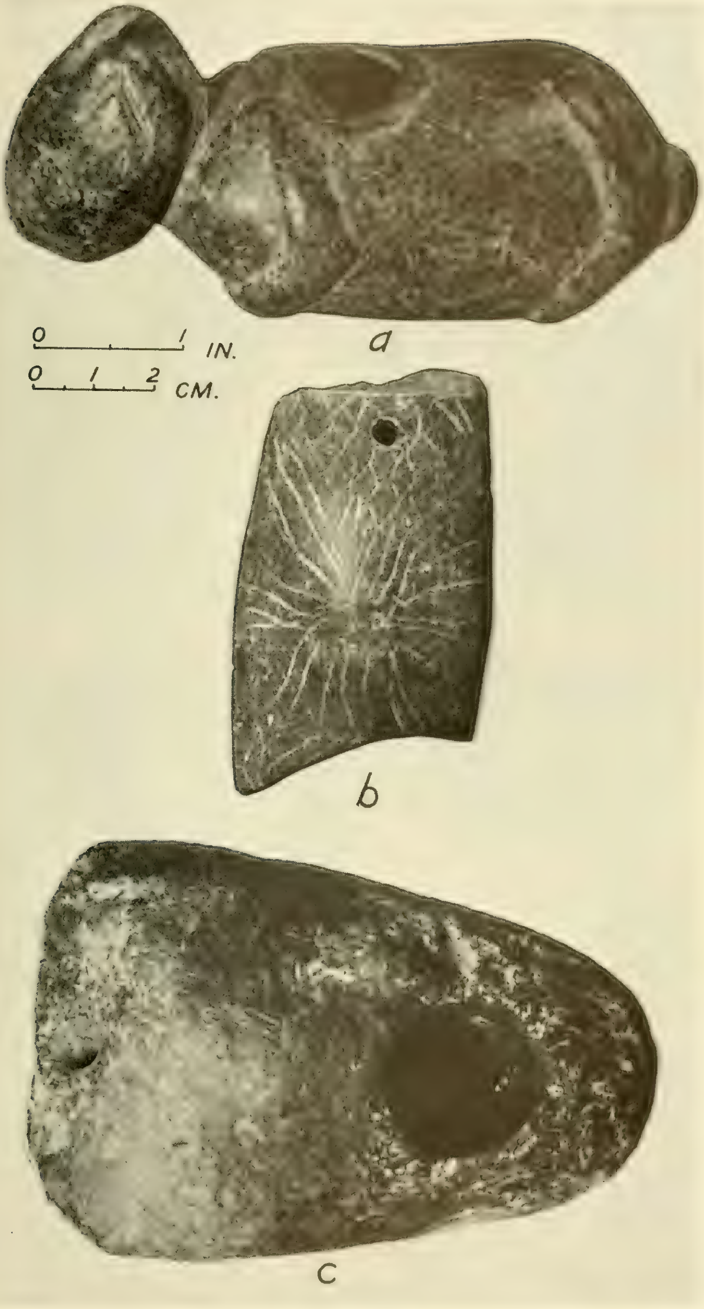
Ceramic remains from site 44Mc14, Clarksville site. *a–c*, Adornos; *d, e*, Clarksville combed.



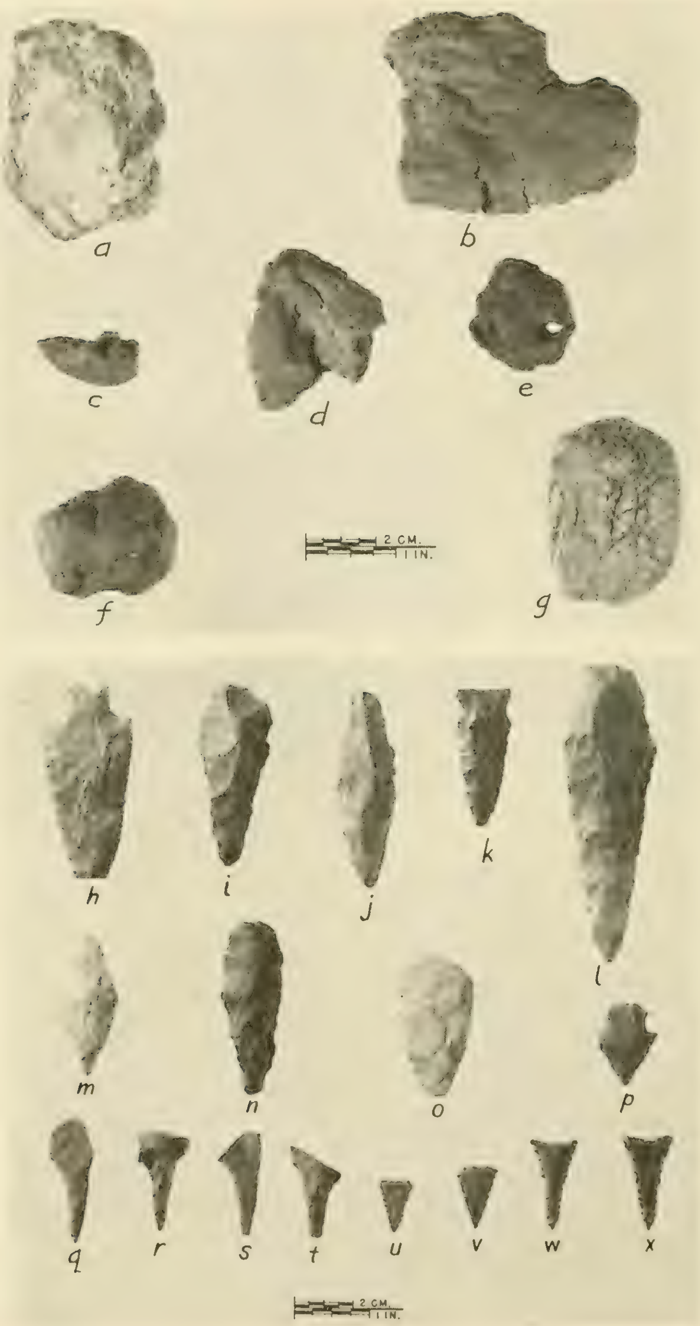
Ceramic remains from site 44Mc14, Clarksville site. A, Interior of bowl showing combing effect—Clarksville Combed; B, *a–k*, disk from sherds of vessels from the Clarksville Series; *l* small stone discoidal with incised decoration.



Shell beads, and stone and clay pipe series from site 44Mc14, Clarksville site. *a*, illustrates the number of small disk-shaped shell beads needed to make up an inch of necklace; *b*, pipe series from the straight tubular to the elbow type made of steatite; *c*, illustrates the various forms taken for the terminal portion of the pipe stems; *d*, miscellaneous pipe forms from the large, crude tubular, platform, to elaborately punctated.



Miscellaneous stone and clay objects from site 44Mc14, Clarksville site. *a*, Zoomorphic pipe in the form of a small rabbit made of steatite; *b*, two-hole bar gorget made of steatite; *c*, clay pipe in the form of a frog.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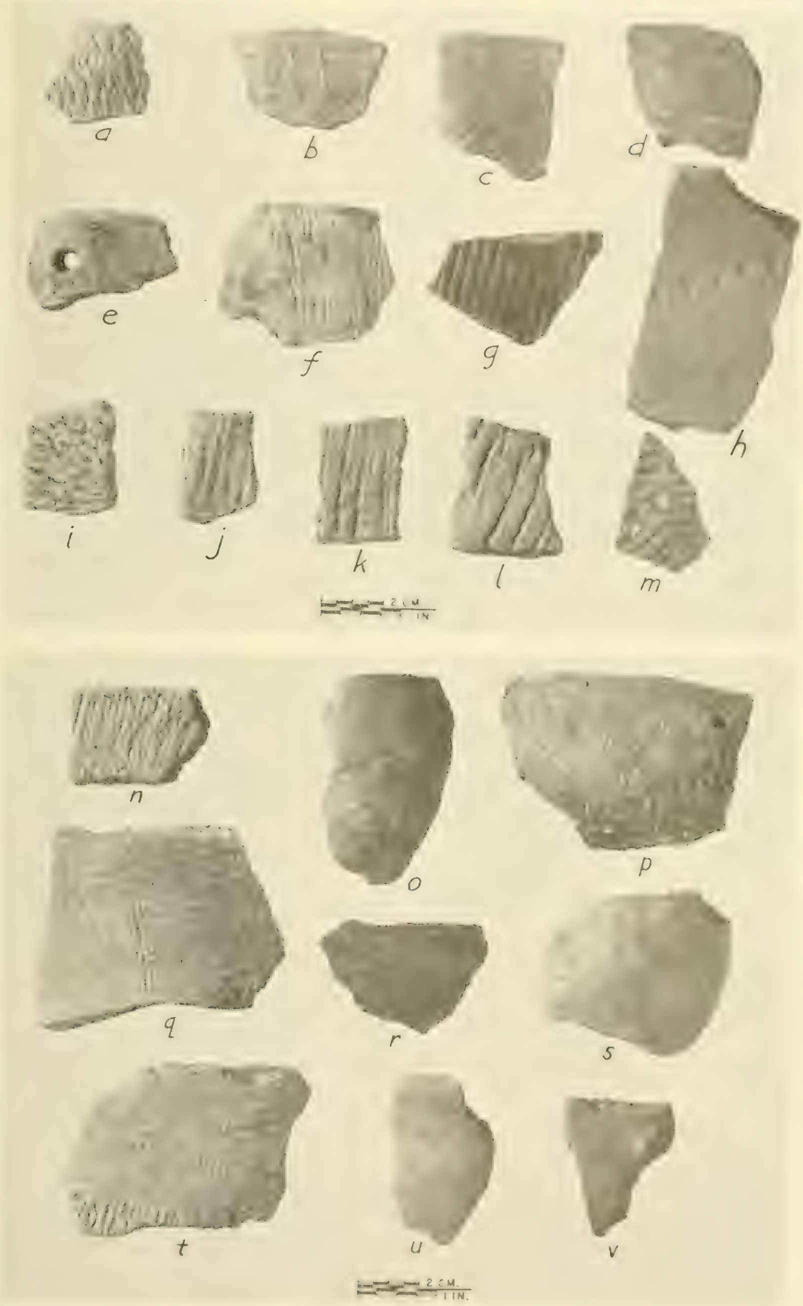
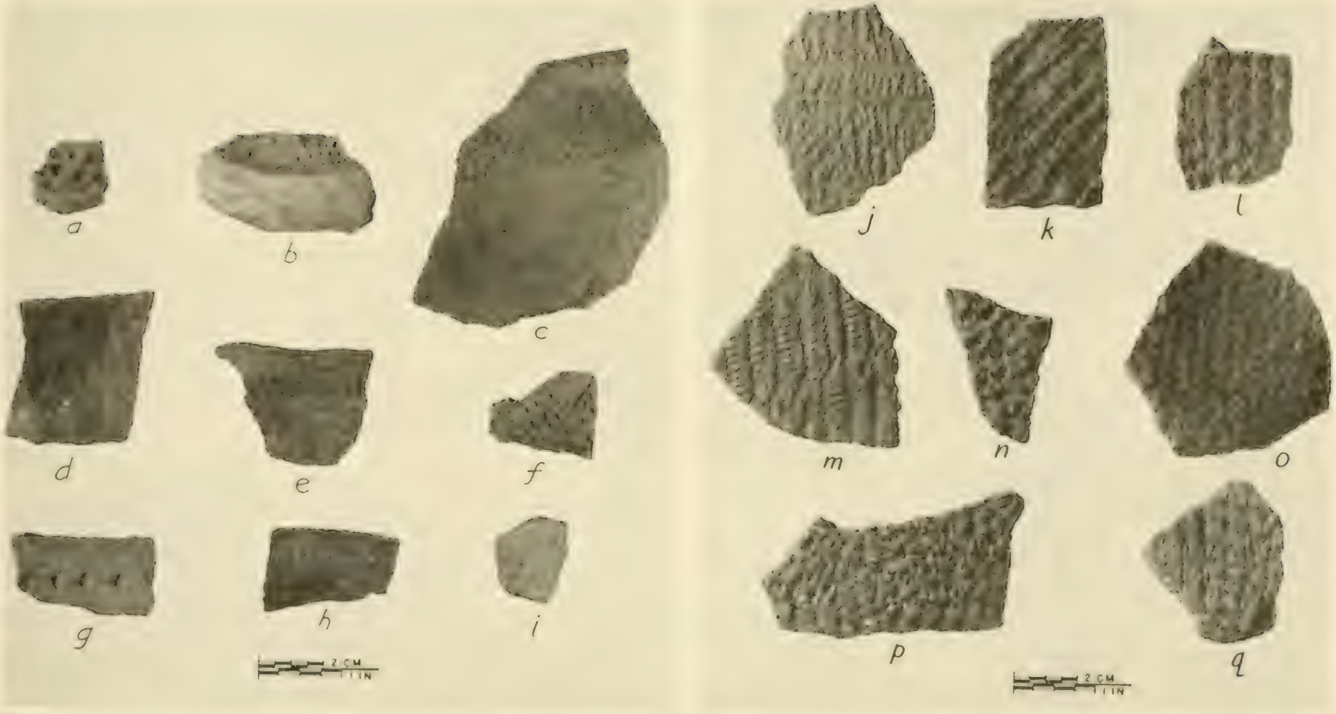
x
2 CM.
1 IN.

Clay and stone specimens from site 44Mc14, Clarksville site. *a–g*, Burned lumps of clay which faintly resemble those objects recovered from the Jaketown site; *h–p*, Early and Middle Woodland projectile forms; *q–t*, types of fine stone drills; *u–x*, Late Woodland triangular projectile forms.



Ceramic remains from site 44Mc14, Clarksville site. *a,* Corncob impressed; *b,* unknown check stamped; *c,* partially obliterated fabric impressed; *d, e, o, p, r, s, u, v,* various qualities of Clarksville Plain; *f, k, l, n,* Clarksville Cord-Wrapped Paddled; *g,* simple-stamped; *h, q,* Clarksville Combed; *i,* textile-impressed; *j,* basket-impressed; *m,* form of simple-stamped; *t,* partial obliteration of fabric impressed in vicinity of neck of vessel.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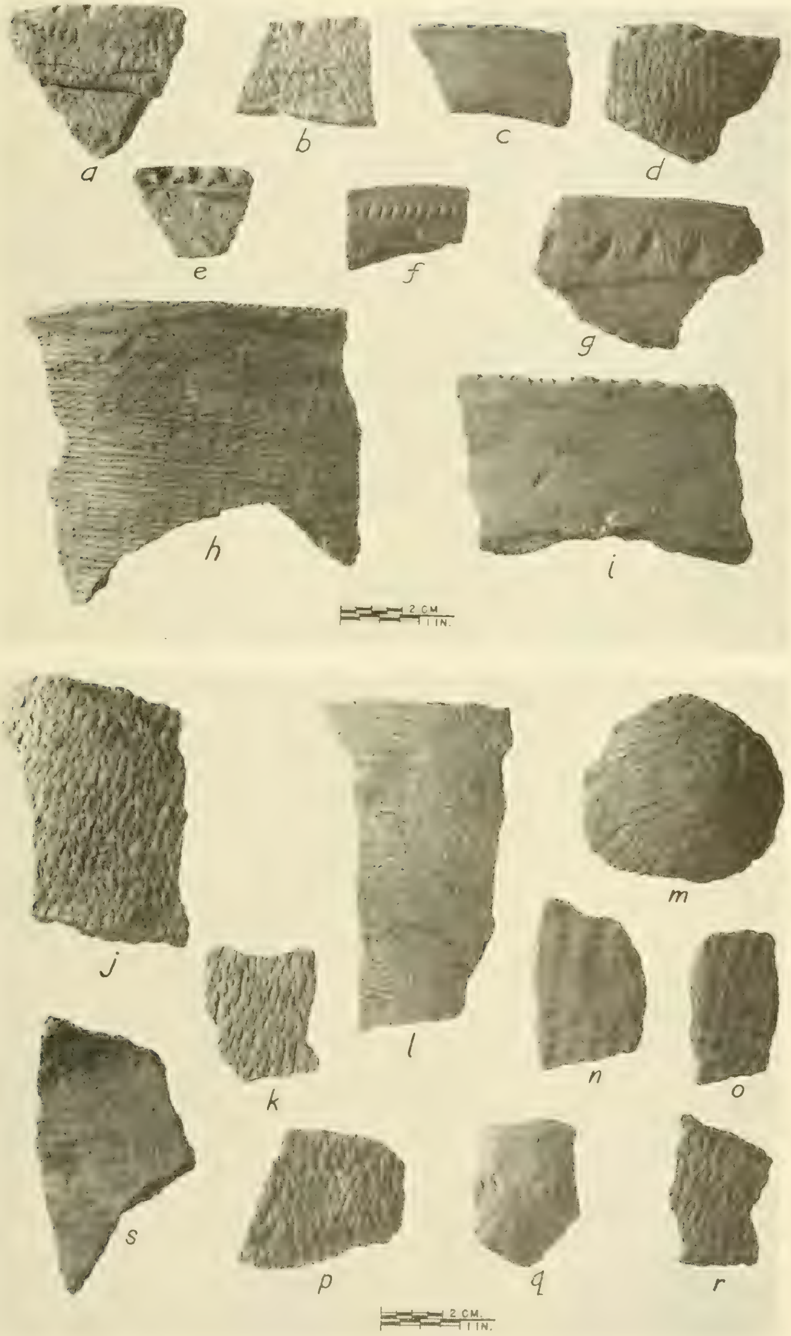
2 CM
1 IN

Ceramic remains from site 44Mc14, Clarksville site. *a–e*, *i*, Clarksville Punctated; *f–h*, incised; *j*, fabric impressed; *k*, *m*, twined fabric impressed; *l*, *o*, *q*, fine net impressed; *n*, *p*, fabric roughened.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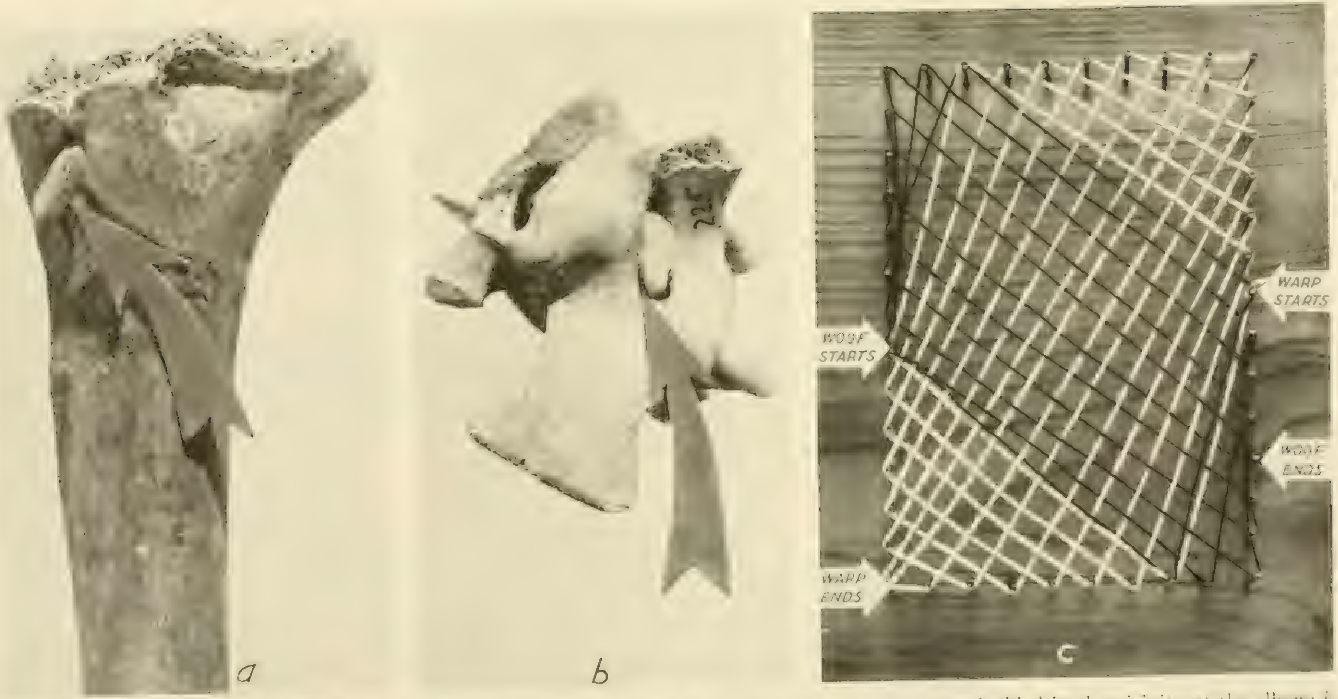
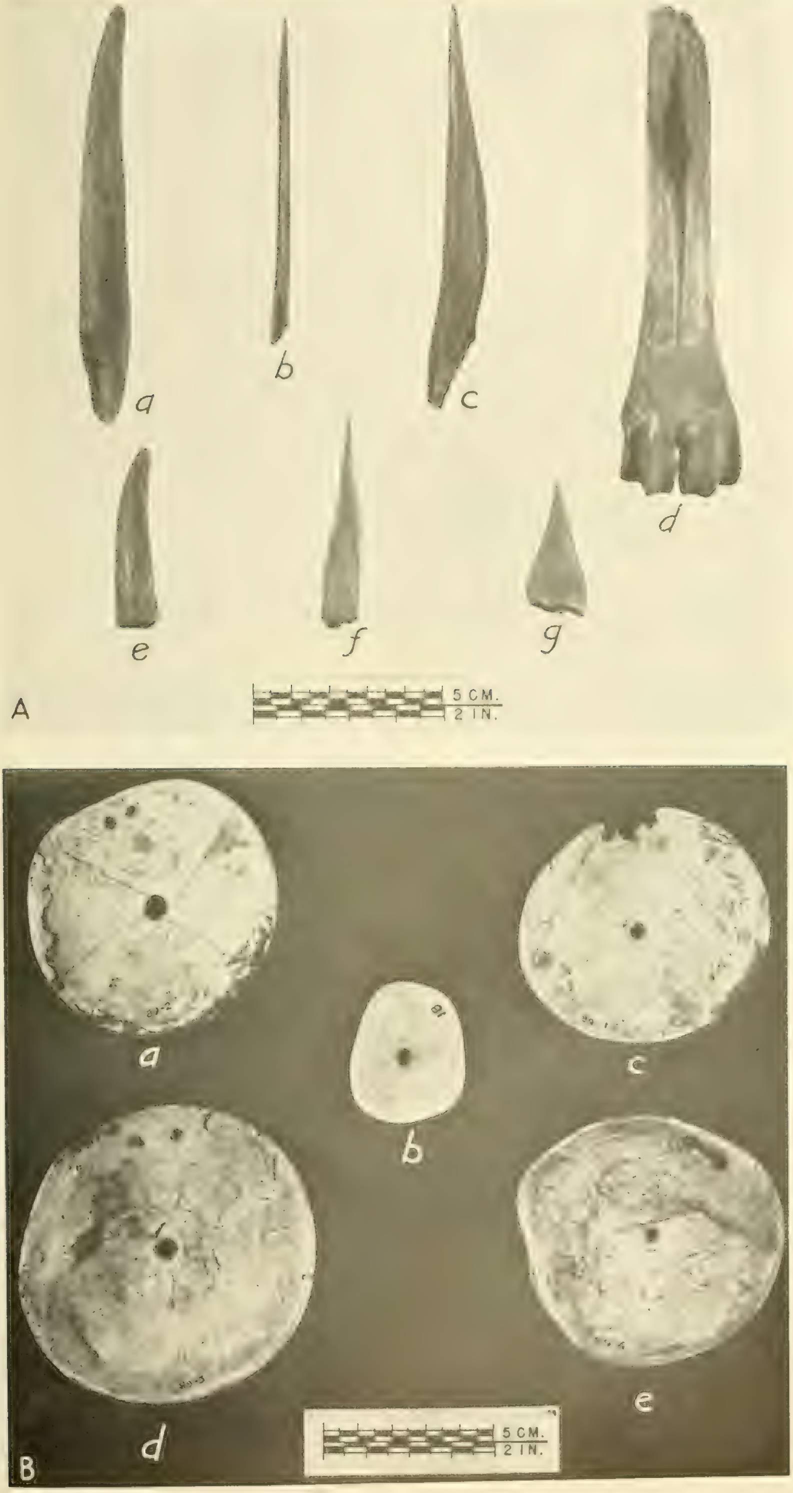
q
r
2 CM.
1 IN.

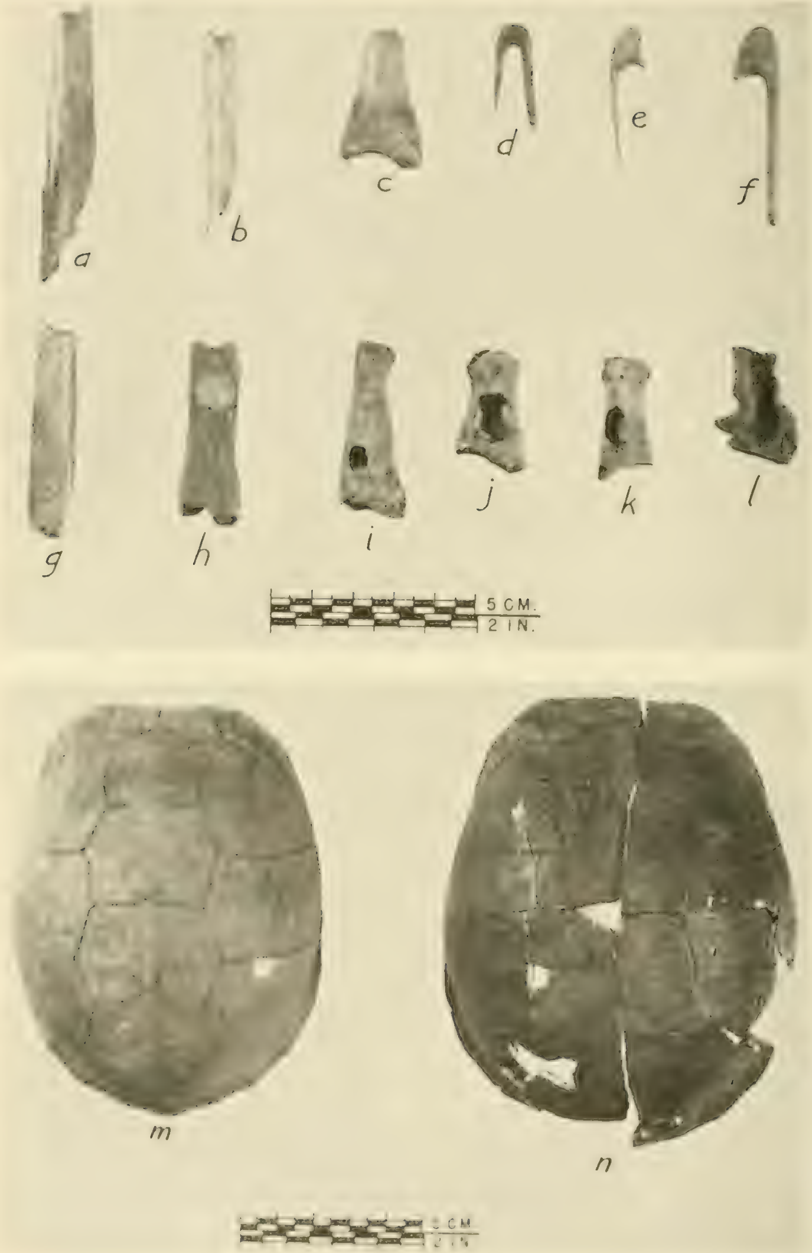
Ceramic remains from site 44Mc14, Clarksville site. *a–i*, Various types of rim treatments; *j*, *k*, *p–r*, fabric marked; *l*, twined fabric impressed; *m*, cord-wrapped paddled; *n*, *o*, coarse fabric marked; *s*, textile impressed.


a
b
c
WARP STARTS
WOOF STARTS
WOOF ENDS
WARP ENDS
225

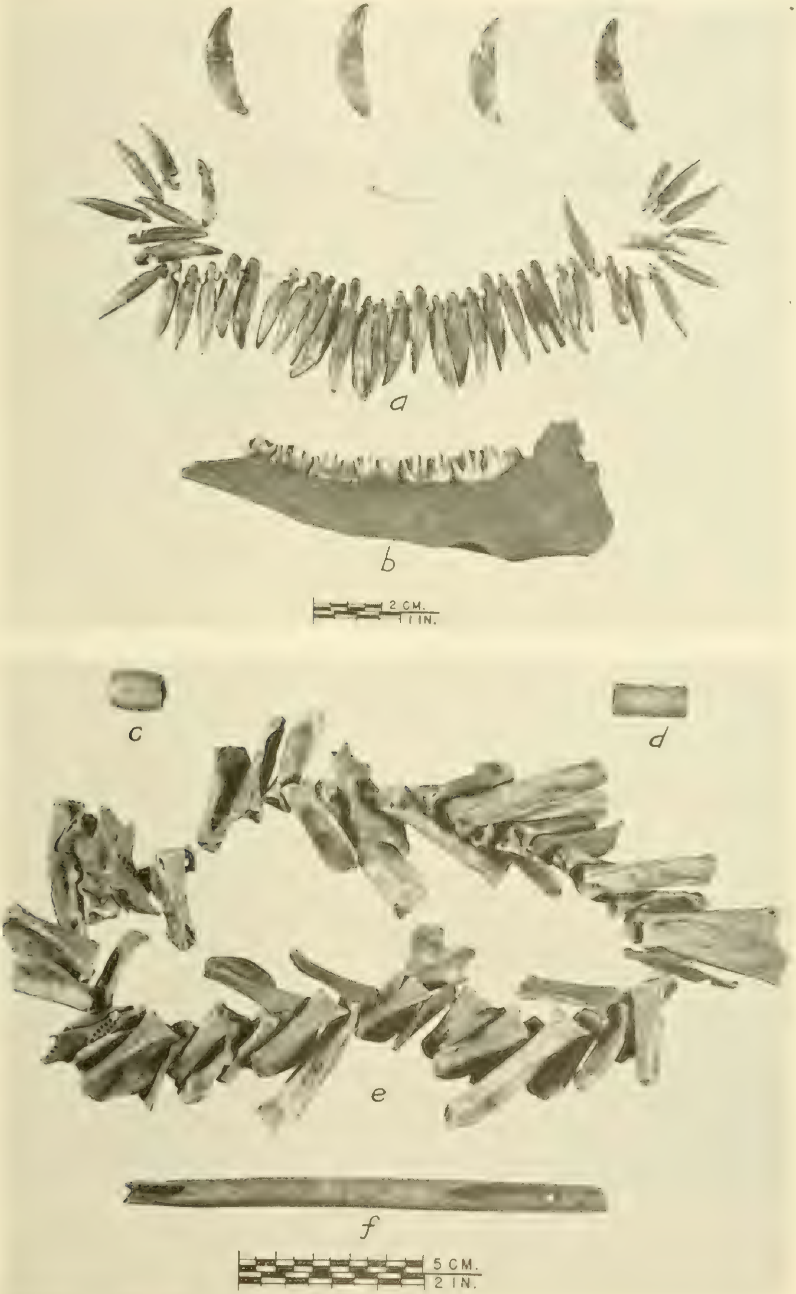
Osseous remains from site 44Mc14, Clarksville site. *a*, Human humerus with small quartz projectile embedded in the vicinity of the elbow; *b*, vertebra of deer with quartz projectile point partially embedded in the medullary canal; *c*, reconstruction of the weave of some of the fabrics manufactured by the inhabitants of the Clarksville site during Late Woodland times.



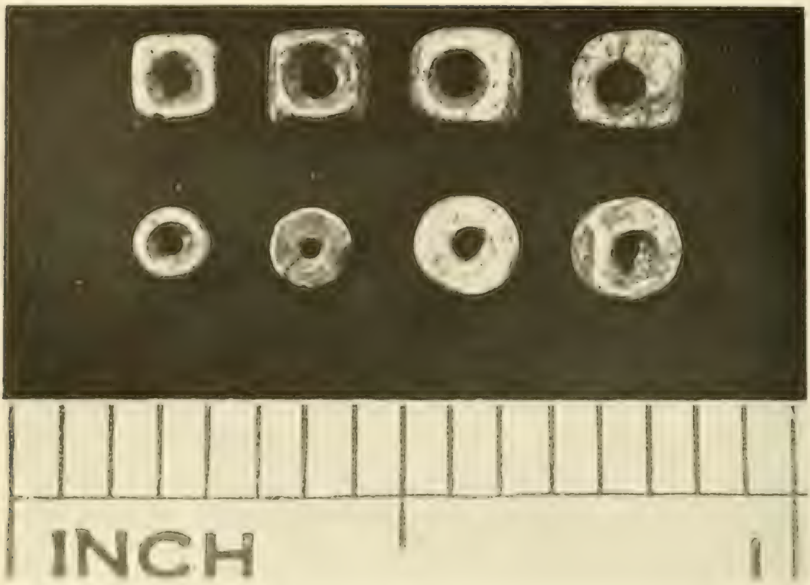
Bone and shell specimens from site 44Mc14, Clarksville site. A, *a*, *e*, Antler tips used as chipping tools and punches; *b*, jaw of garfish pointed to act as an awl; *c*, *f*, *g*, fragmentary deer bone fashioned into awls; *d*, deer bone fashioned into spokeshave. B, *a–e*, *Busycon* shell disks worn as pendants.



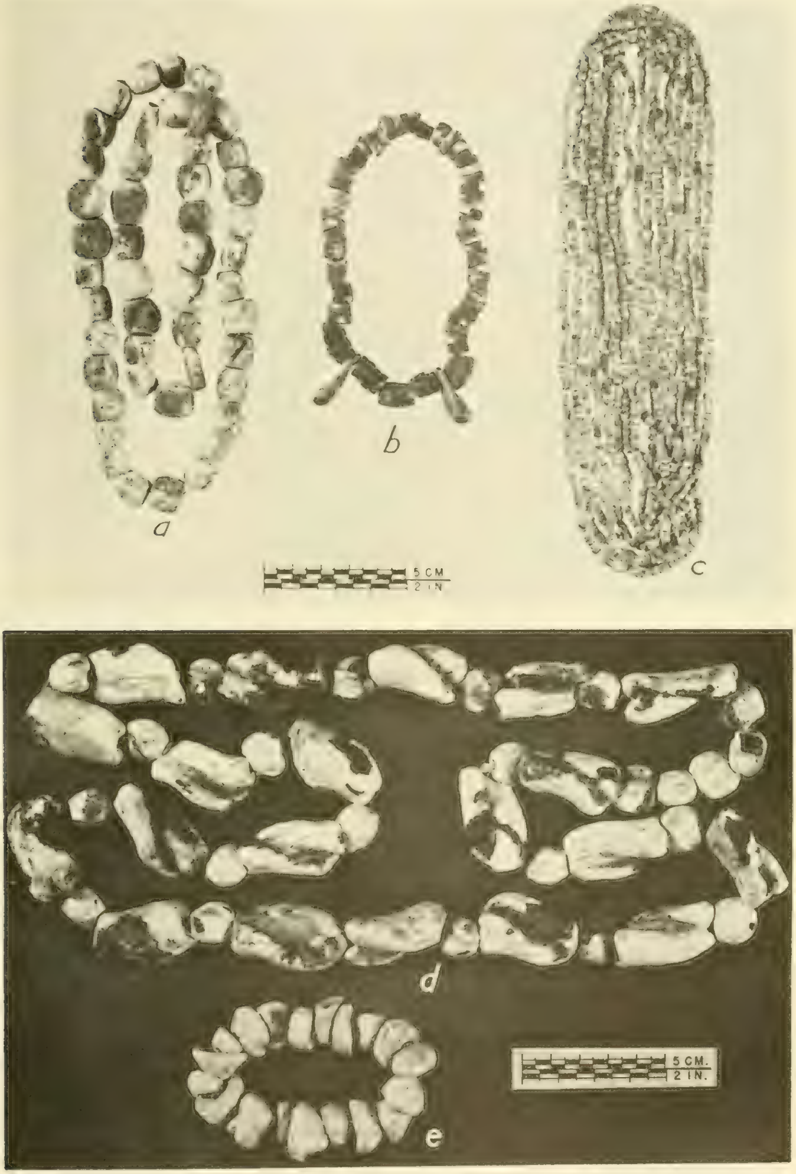
Bone and turtle specimens from site 44Mc14, Clarksville site. *a*, *b*, *g*, Bifurcated bone tools; *c*, split deer's toe bone; *d–f*, bone fishhooks; *h*, *i–k*, perforated deer toe bones; *m*, turtle carapace dish; *n*, turtle carapace partially sawed in half and used as a rattle.



Bodily ornaments made from animal remains from site 44Mc14, Clarksville site. *a*, Necklace and individual animal canine teeth fashioned into necklace and worn individually; *b*, partially worked lower jaw of deer; *c*, *d*, bone beads fashioned from sections of animal bones; *e*, necklace made of wing bones of turkey's and lower jaws of rabbits and squirrels; *f*, cut and perforated long bone of bird.



Shell beads illustrating the various steps in the manufacture of each individual bead from site 44Mc14.


a
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2 IN
d
e
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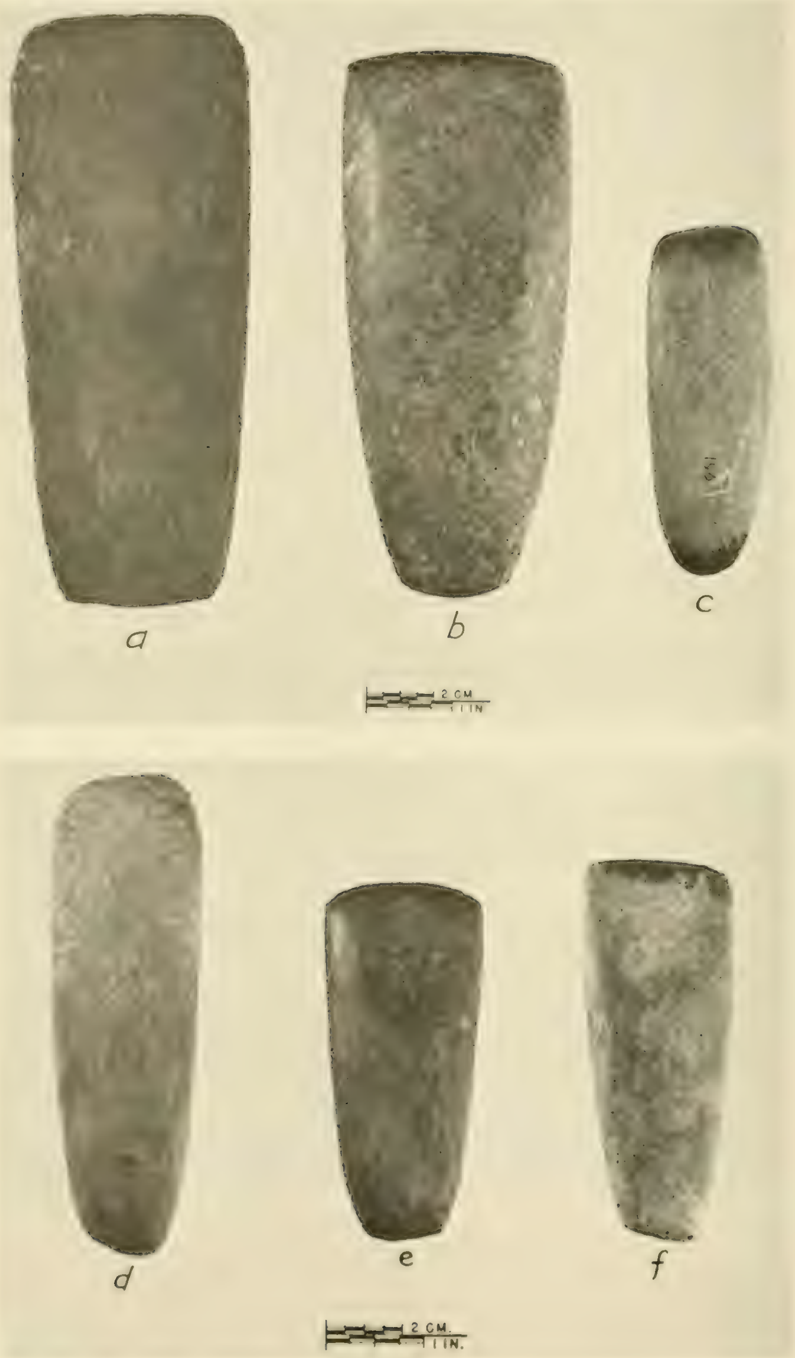
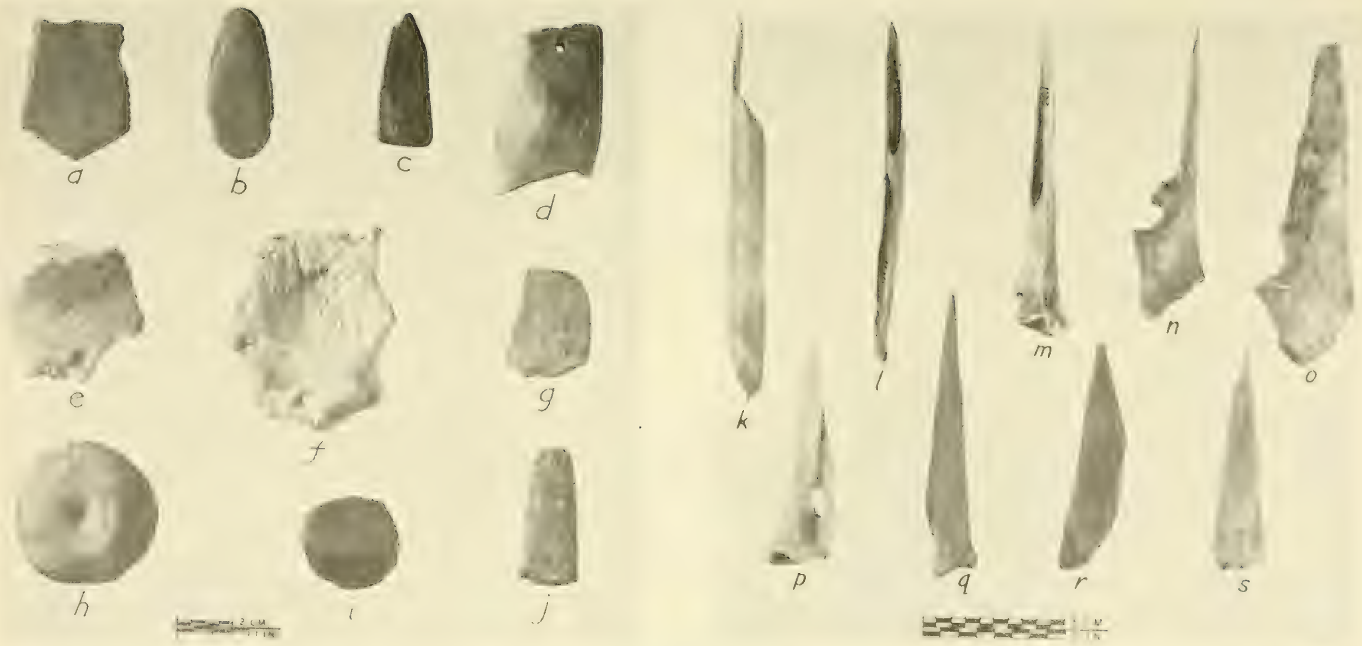
2 IN.

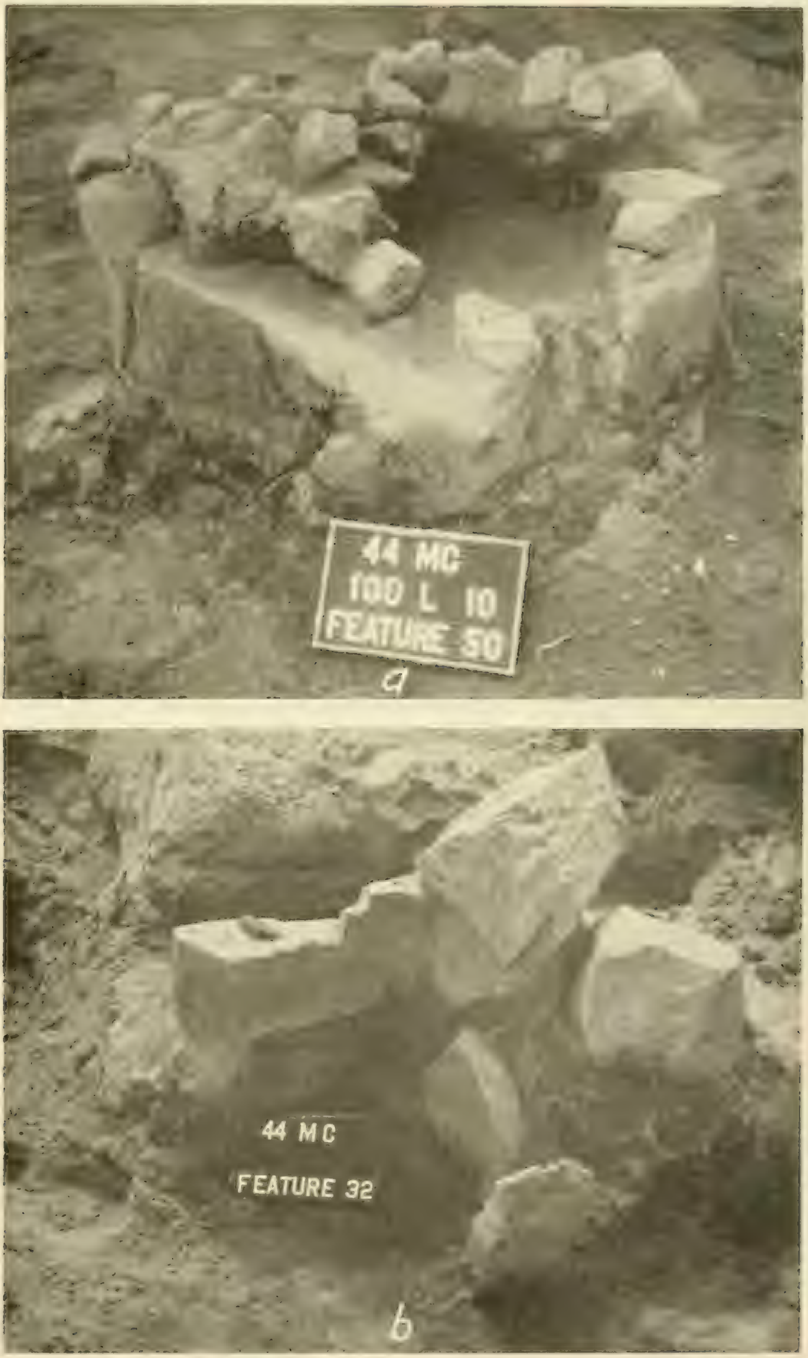
Shell bead necklaces recovered from site 44Mc14, Clarksville site. *b*, Necklace has two perforated elk teeth as pendants.



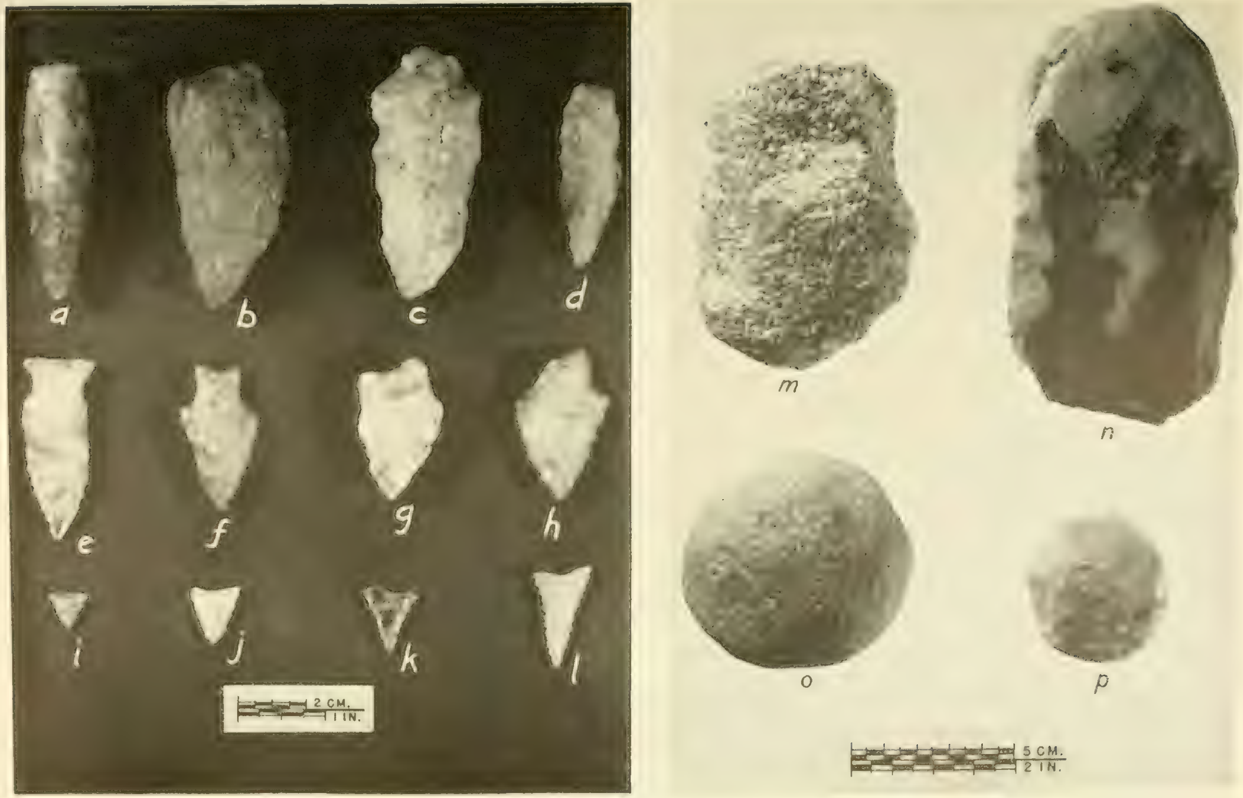
Stone specimens from site 44Mc14, Clarksville site. *a–c*, Types of adzes, specimen *c* has bit at either end; *d–f*, types of celts associated with typical early Woodland cultures.



Stone and bone specimens from site 44Mc14, Clarksville site. *a*, *b*, *c*, *g*, Potter's tools specimens *a* and *b* are serrated and when used will create the combed effect noticeable on Clarksville vessels; *d*, fragment of 2 holed steatite bar gorget; *e*, *f*, fragments of steatite used in the manufacture of a talc used for bodily adornment; *h*, handstone used in the manufacture of fire; *i*, *j*, rubbing stones; *k*, *l*, *q*, *r*, *s*, split animal bones converted into awls and punches; *m*, turkey bone converted into an awl; *n*, *o*, deer bone awls; *p*, turkey bone awl.


44 MC
100 L 10
FEATURE 50
a
44 MC
FEATURE 32
b

Features uncovered at site 44Mc14, Clarksville site. *a*, Hearth area with the broken stones associated with it; *b*, stone-lined well, Feature 32.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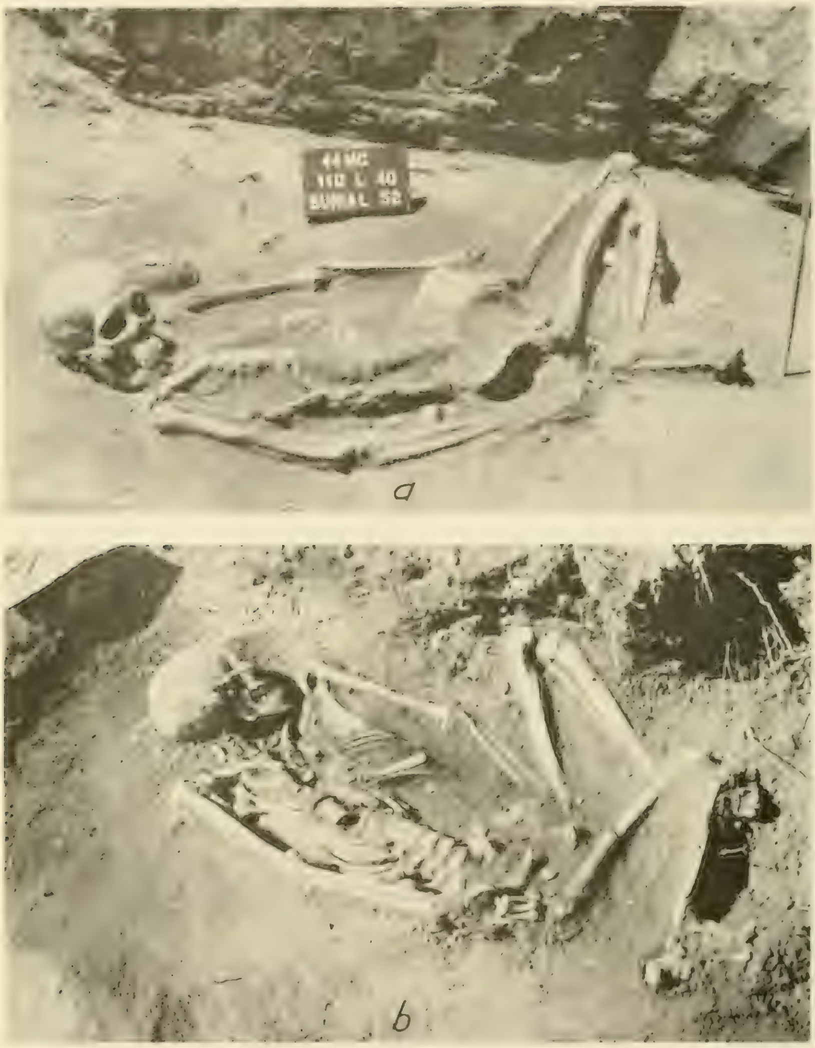
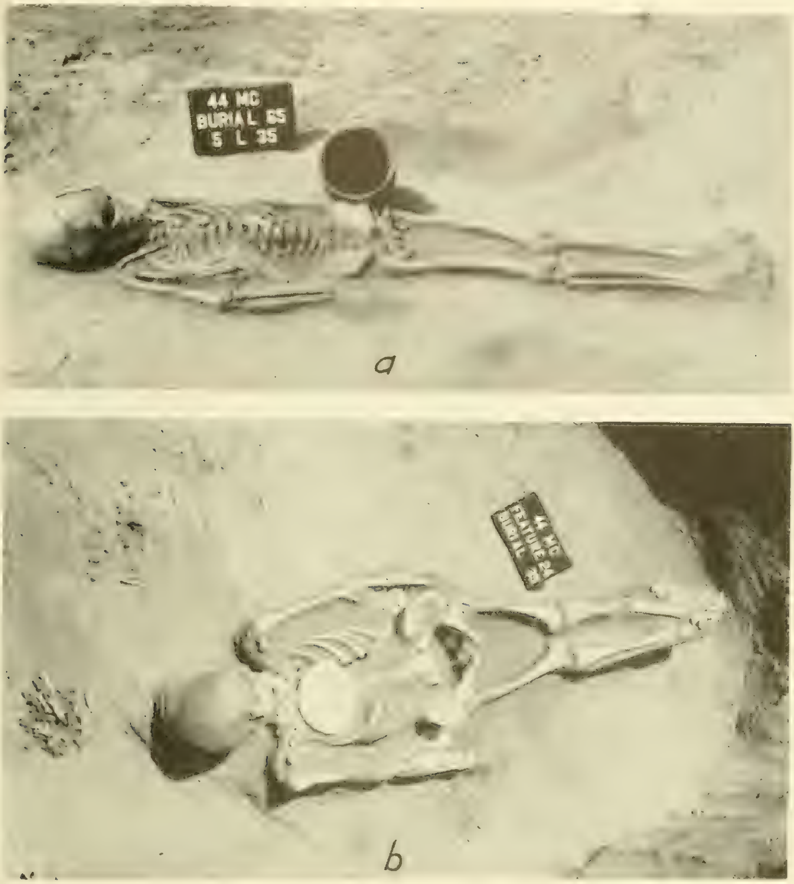
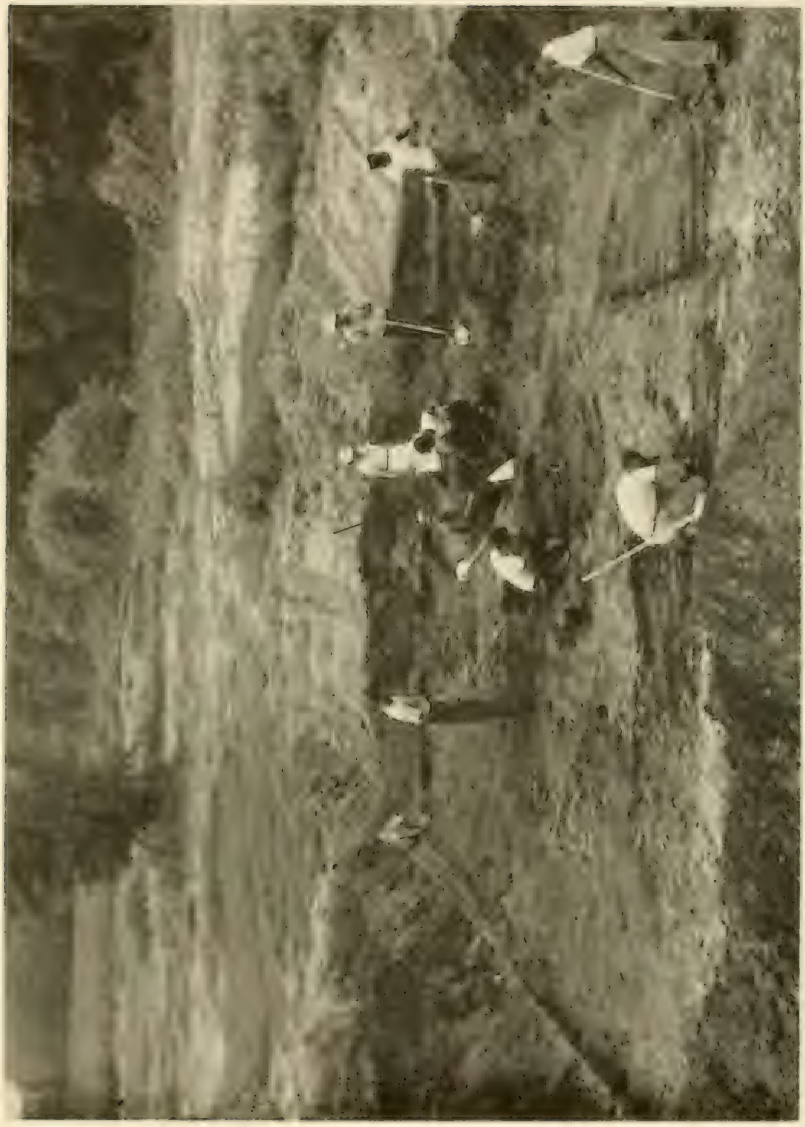
Stone specimens recovered from site 44Mc14, Clarksville site. *a–l*, projectile points; *m*, hafted hammerstone; *n*, grubbing tool or hoe; *o*, stone ball; *p*, round hammerstone.



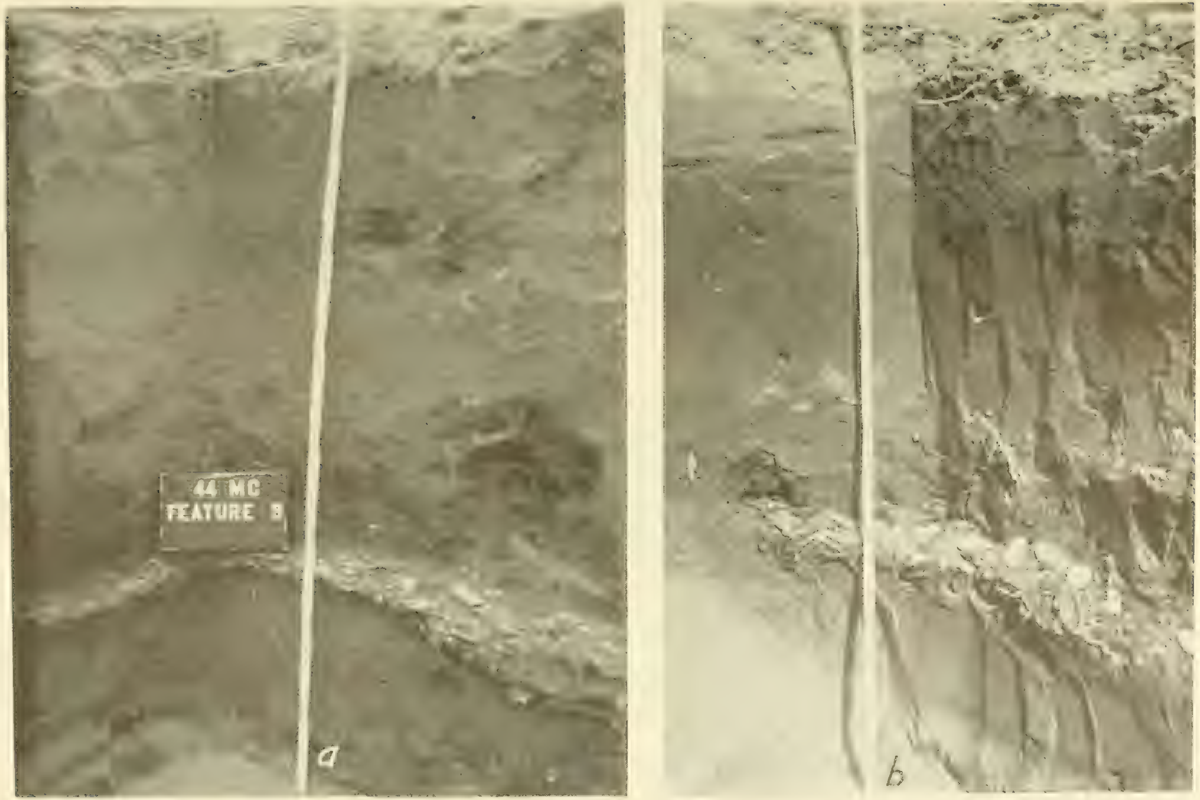
Burial forms found at site 44Mc14, Clarksville site. *a*, Burial No. 52, adult male, with turtle carapace object alongside left shoulder; *b*, burial No. 14, adult male, demonstrating the excellent preservation of the bony structure



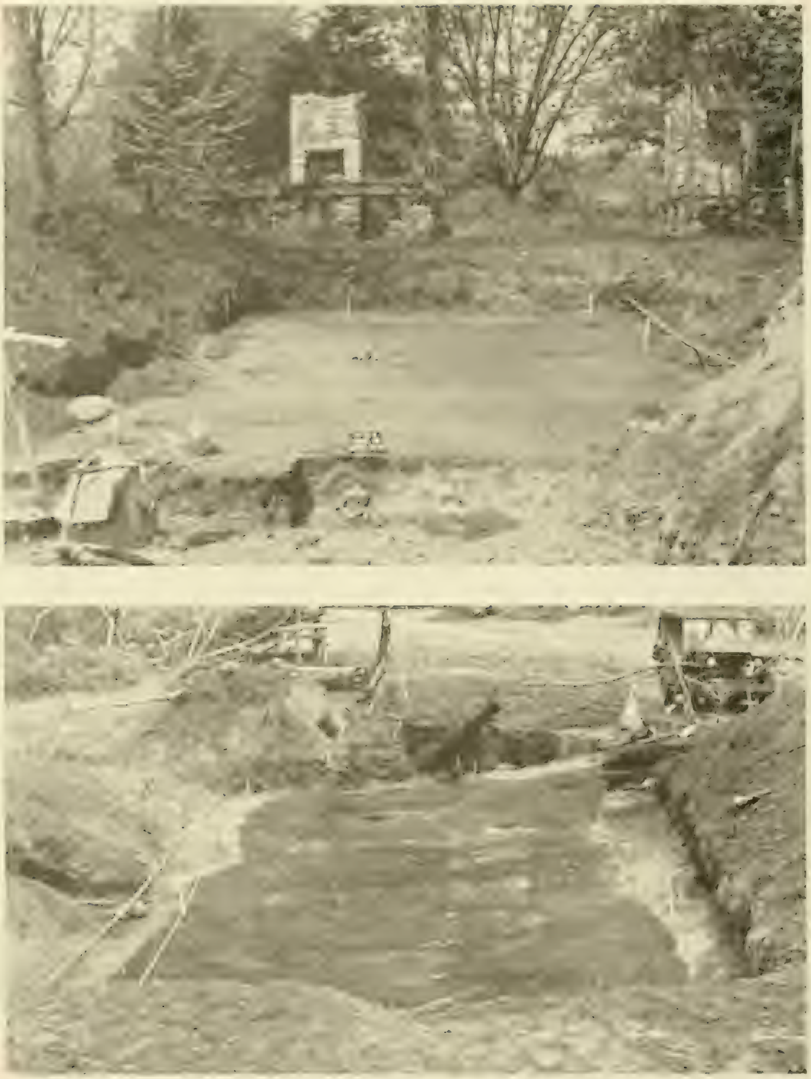
Burial forms found at site 44Mc14, Clarksville site. *a*, Child between 6 to 8 years old accompanied by a jar that is illustrated in plate 56, *a;* *b*, burial No. 39, female between 25 and 30 years old showing position of various artifacts.



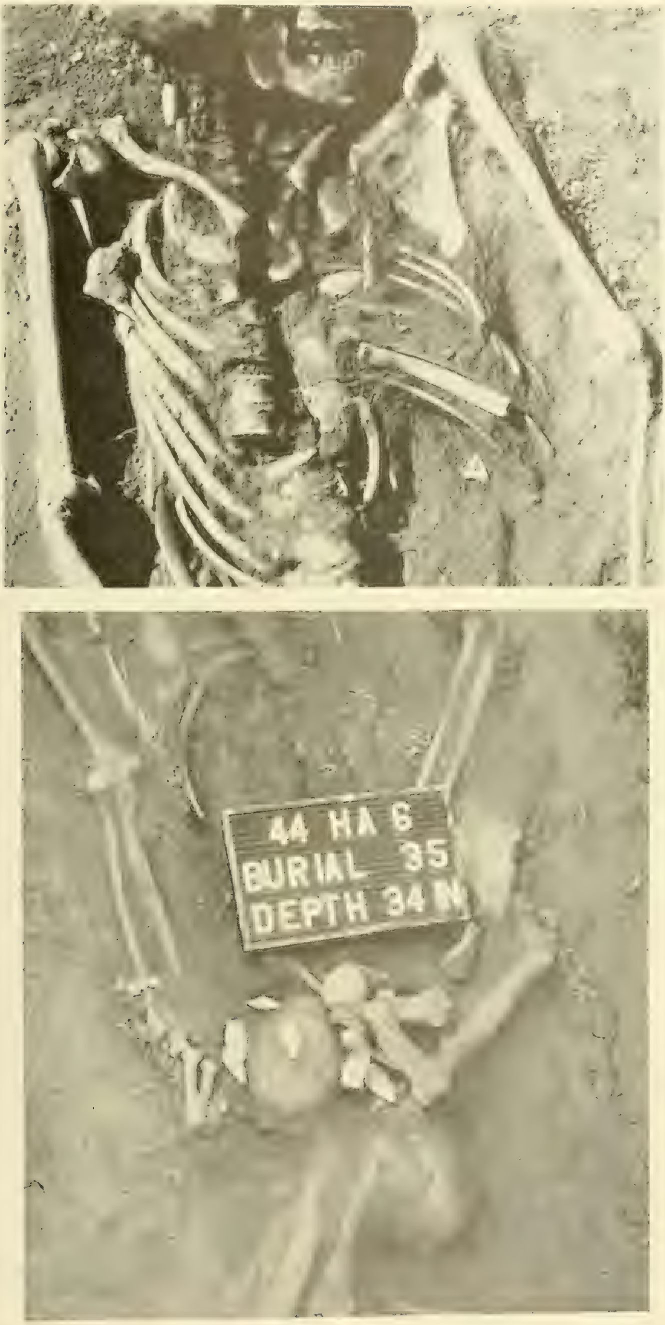
Thirty-foot section of site 44Md14 being investigated and the uncovering of several burials within the area.



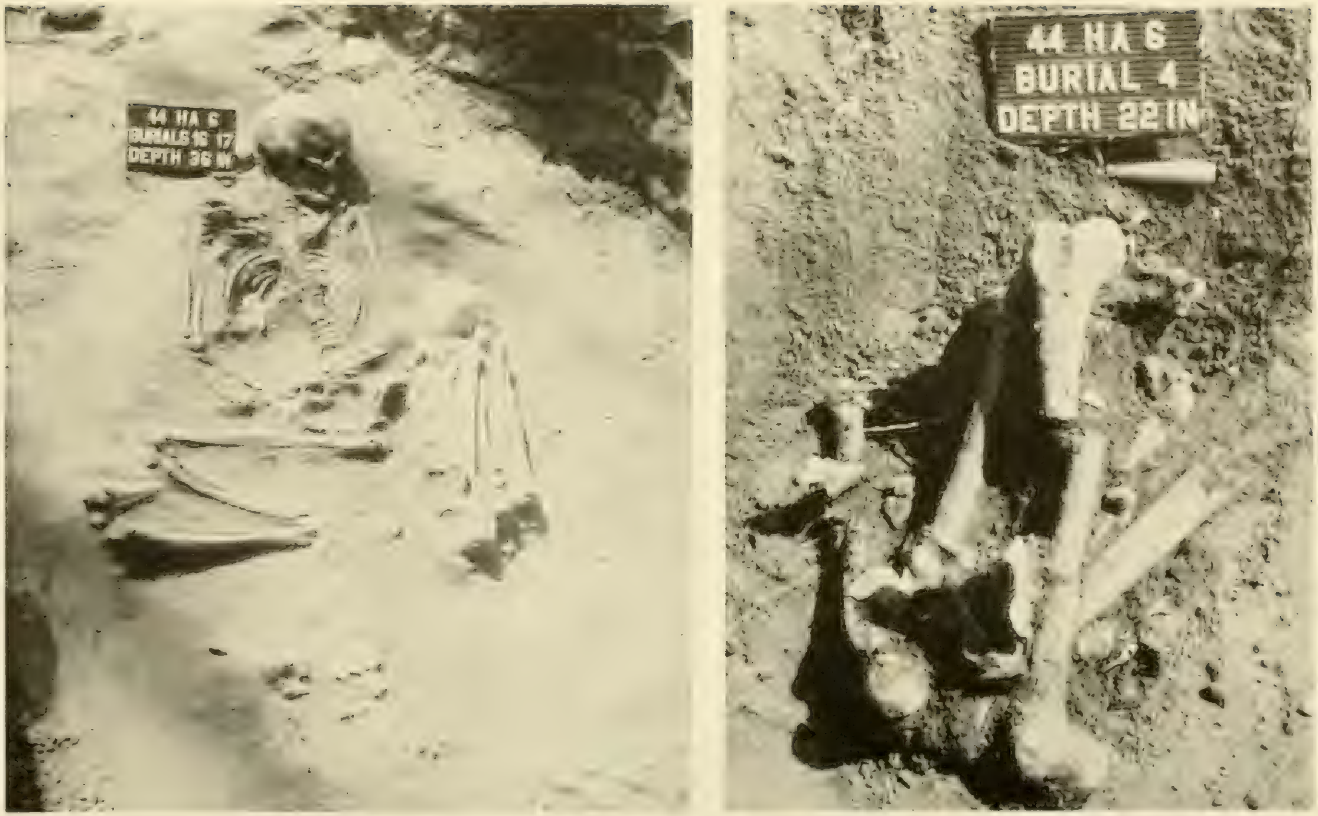
Profile of Feature 9, site 44Mc14, Clarksville site. An overburden of 18 inches of sterile sand covered a major portion of the site.



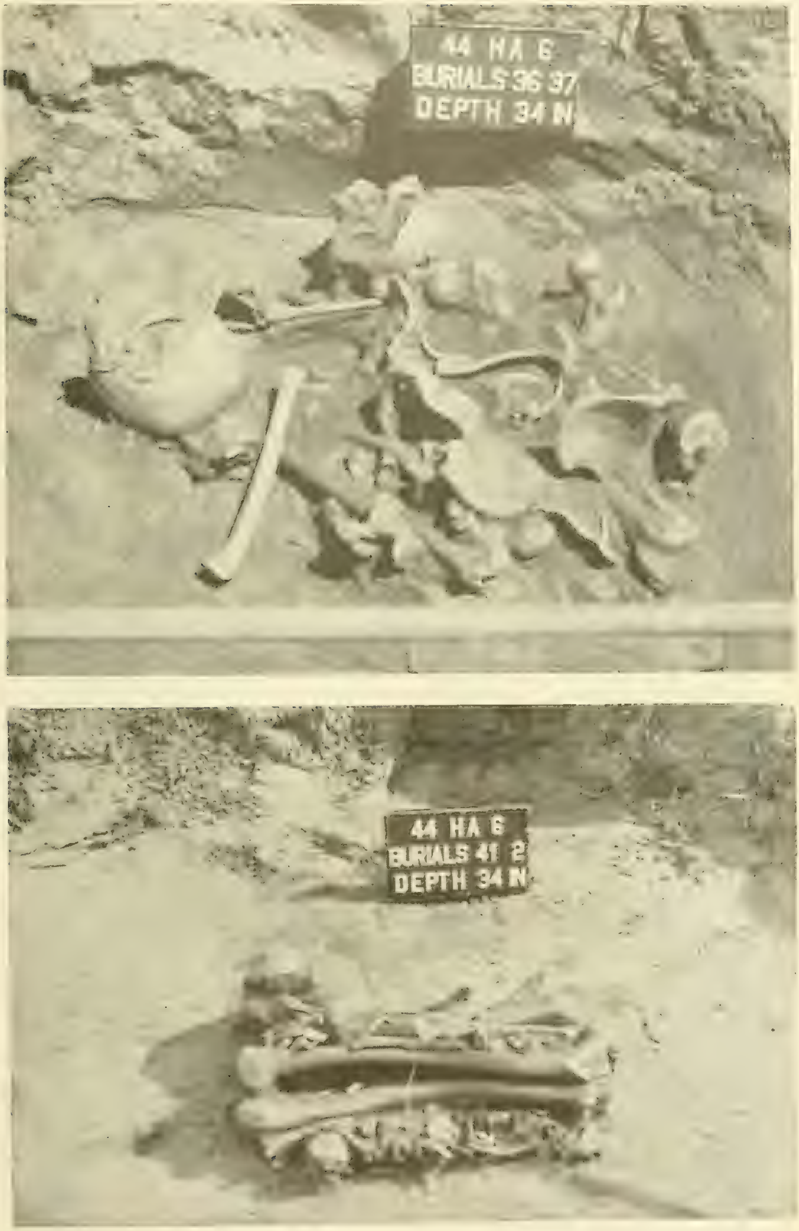
Large rectangular structure uncovered to the east of the old Tollifero house in site 44Ha6. Burial 20 was partially under the floor of the structure. In bottom picture note the iron water pipe almost touching the burial to the left of the picture.



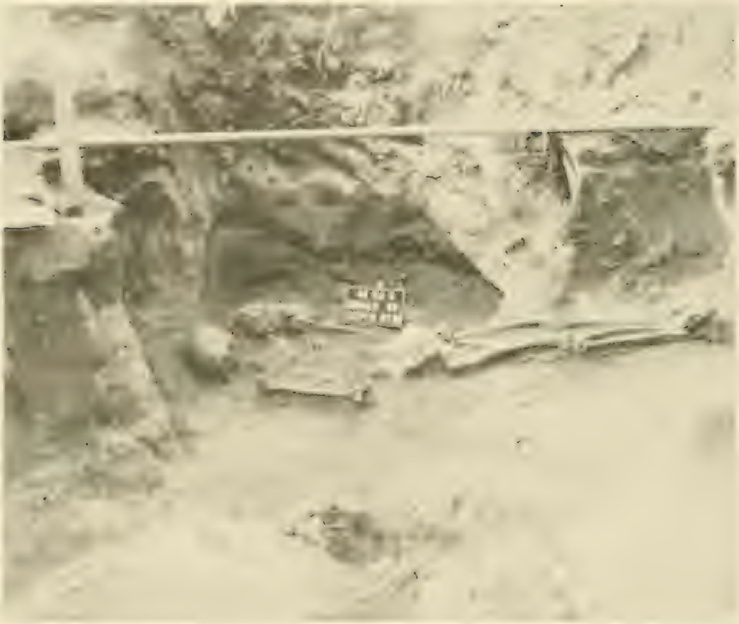
Details of burials uncovered in site 44Ha6. *Upper:* Quartz projectile point found within the left side of the chest cavity and a single bone bead under the right ear. *Lower:* Picture shows not only six quartz points in the vicinity of the pelvis but also two turtle carapace and a number of animal bones.

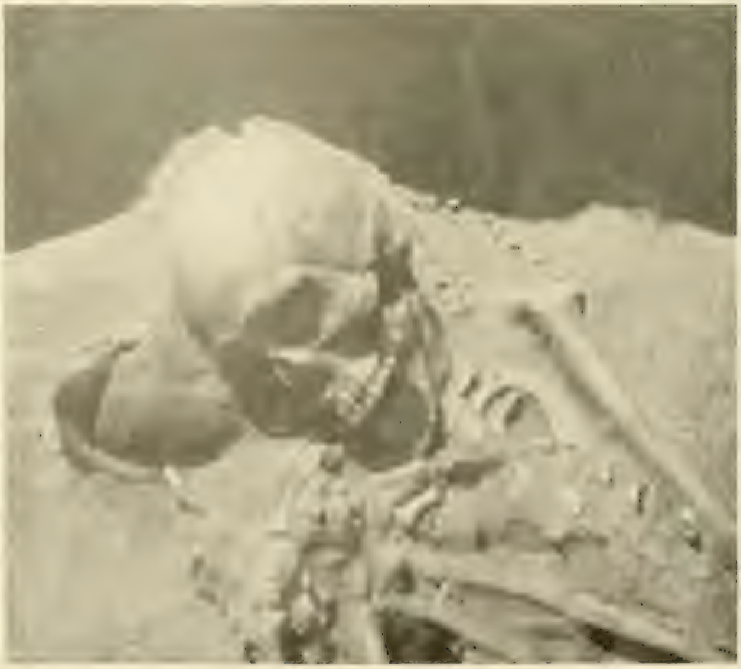

44 HA 6
BURIALS 16 17
DEPTH 36 IN
44 HA 6
BURIAL 4
DEPTH 22 IN

Details of burials uncovered in site 44Ha6. *Left:* Burial 16, semiflexed individual. *Right:* Burial 17, bundle burial. At the foot of the grave is a large turtle carapace probably indicating clan affiliation. To the right is another bundle burial.

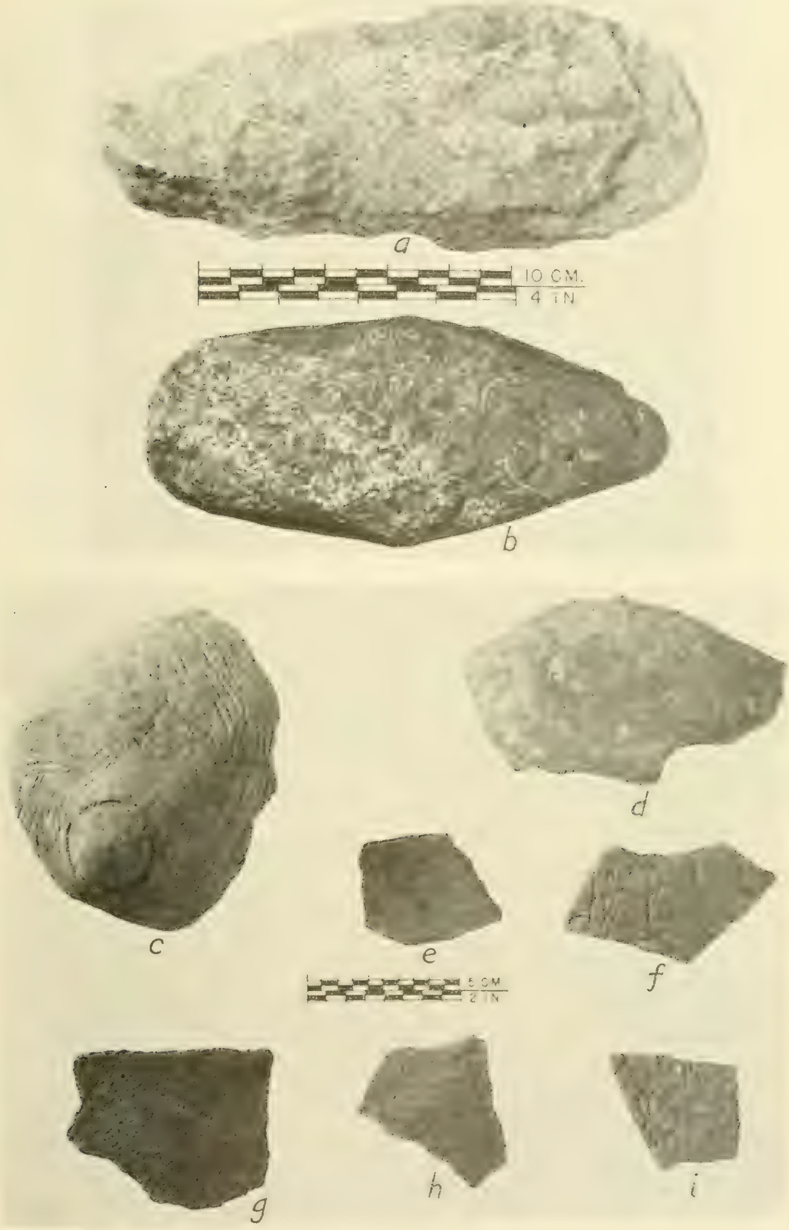

44 HA 6
BURIALS 36 37
DEPTH 34 IN
44 HA 6
BURIALS 41 2
DEPTH 34 IN

Types of bundle burials uncovered in site 44Ha6. *Upper:* Two skulls and portions of two individuals. Beneath them were the remains of a young child. *Lower:* Careful placement of the bones of a single individual within the grave.

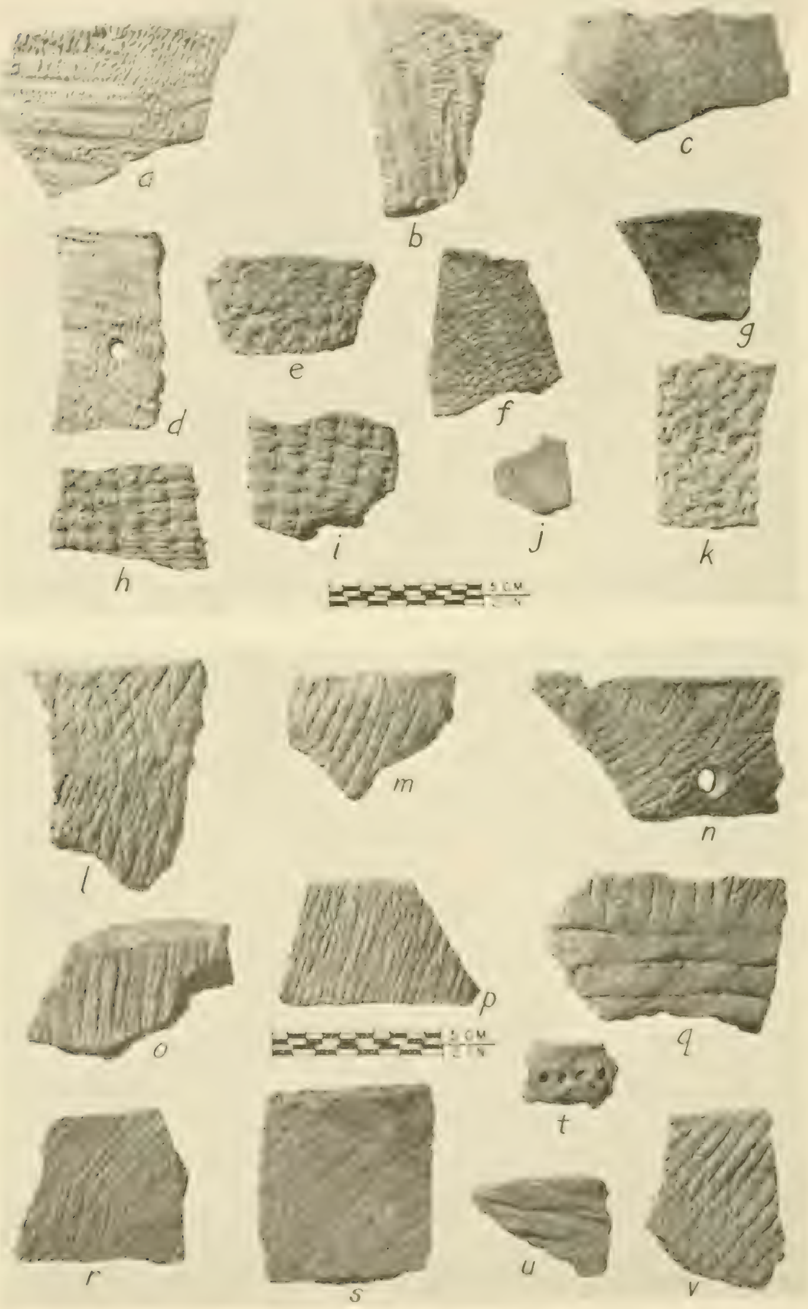




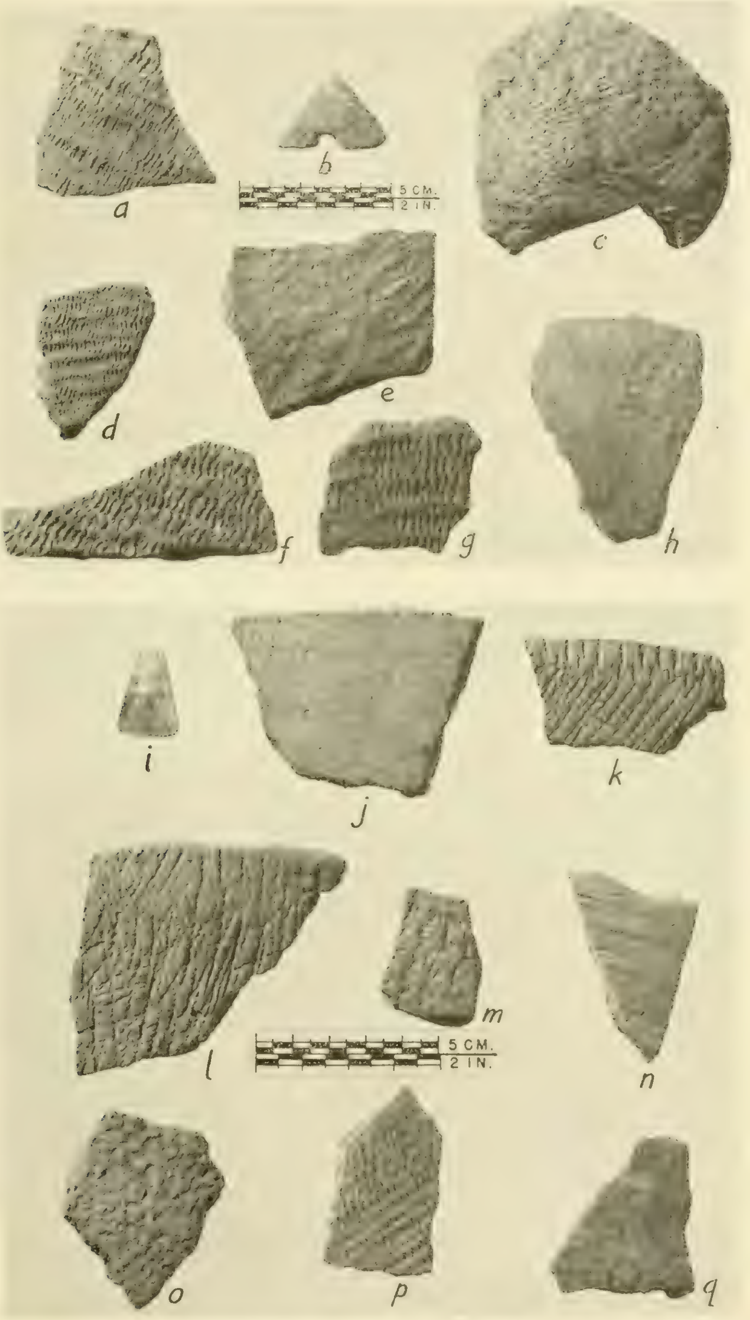
Details of burials uncovered in site 44Ha6. *Upper:* Extended burial, No. 43, and large turtle carapace alongside the left shoulder. *Lower.* Position of turtle rattle (held in left hand) alongside head of this individual.



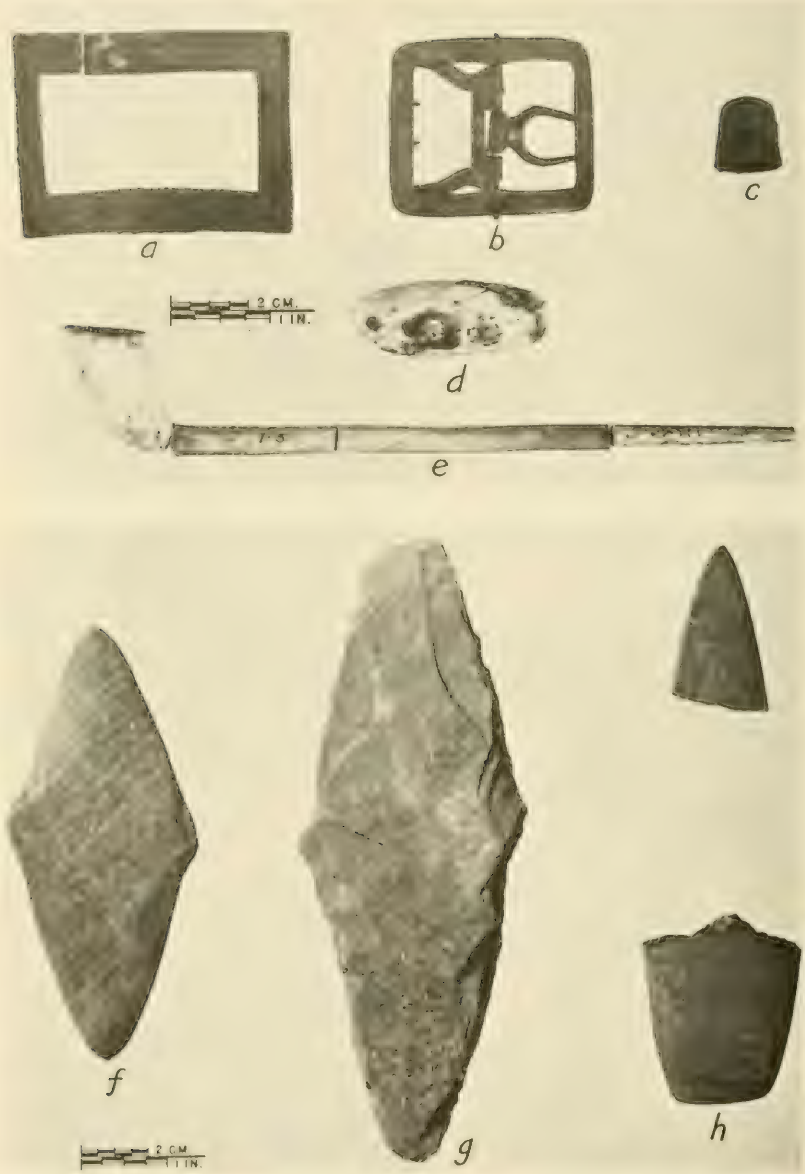
Stone and ceramic remains found in site 44Ha6. *a*, Hand ax; *b*, grubbing tool; *c*, basal section of conoidal pot showing the small clay disk which formed the foundation of the vessel. Exterior treated to cord-wrapped paddle; *d*, plain; *e*, *g*, fabric marked; *f*, net impressed; *h*, textile impressed; *i*, small net impressed.



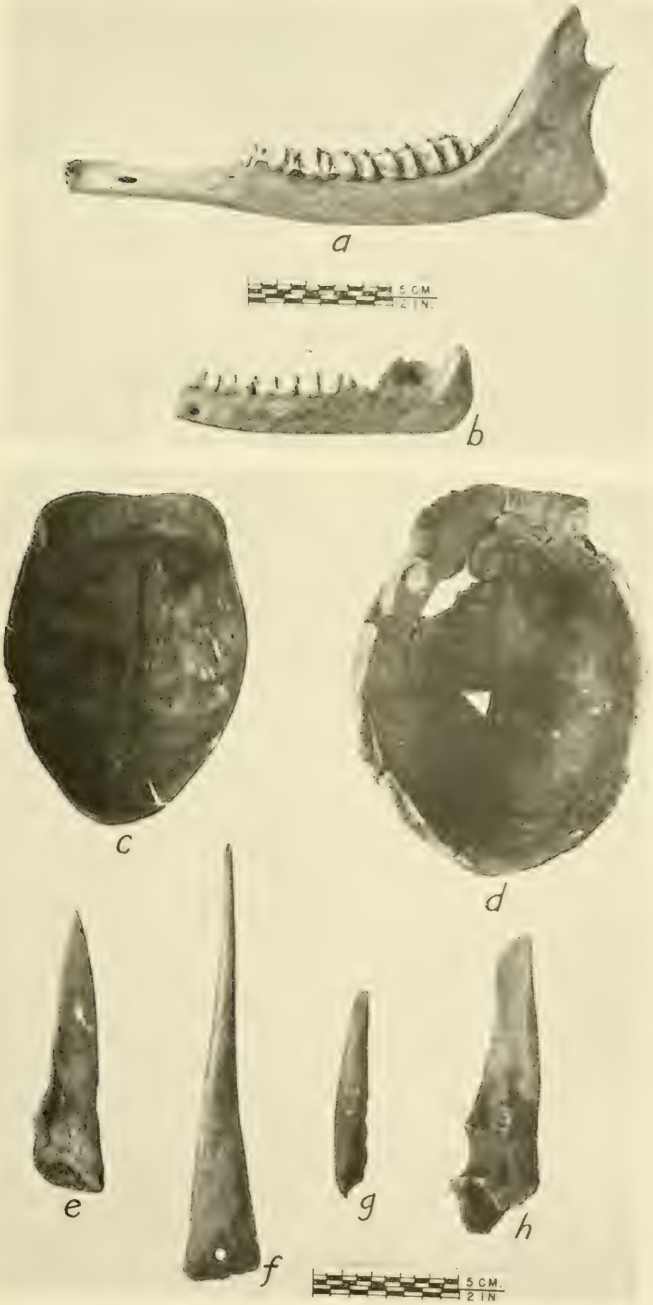
Ceramic remains from site 44Ha6. *a*, *b*, *d*, *f*, Rim sherds of fabric marked; *c*, rim sherd of Plain; *e*, *k*, rim sherds of textile roughened; *h*, *i*, small net impressed; *l*, *m*, *o*, *n*, *p*, *r*, *v*, cord-wrapped paddled; *q*, showing unobliterated coils in the construction of the vessel which were later partially covered on the exterior with cord-wrapped paddle marks; *s*, partially obliterated textile impressed; *t*, small punctated sherd; *u*, partially obliterated fabric-marked.



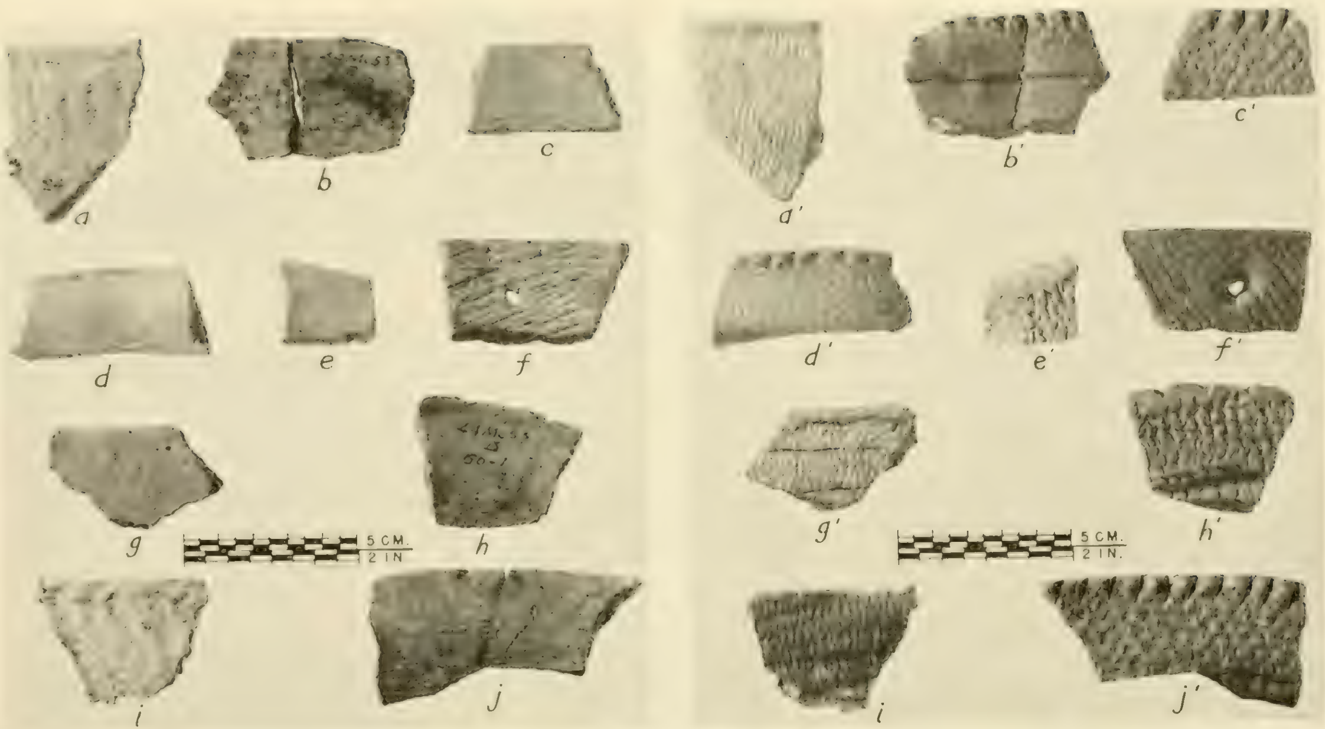
Ceramic remains from sites 44Ha1 and 44Ha5. Sherds *a* to *h* were recovered from site 44Ha1—*a*, *c*, *d*, *e*, are of very close elements of fabric marked; *f*, *g*, and *h*, have larger elements of fabric marked. *i–q*, Sherds from site 44Ha5—*i*, small copper pendant found in washout in the site after a heavy flood; *j*, plain ware; *k*, *l*, cord-wrapped paddle; *m*, net-impressed; *n*, *o*, *p*, textile-impressed; *q*, plain.



Articles of white man's manufacture and stone specimens from site 44Ha6. *a* and *b*, Metal buckles for shoes and clothing; *c*, brass thimble; *d*, large shell perforated for stringing; *e*, sections of white clay smoking pipe; *f*, slate gorget ready for perforating; *g*, slate gorget blank; *h*, two fragmentary portions of gorgets.



Animal remains used as artifacts in site 44Ha6. *a*, Unworked lower jaw of deer; *b*, worked deer's jaw with two holes for suspension; *c*, dipper made from turtle carapace; *d*, dish made from turtle carapace; *e*, bone awl; *f*, bone hairpin made from rib of deer; *g*, tip of deer's antler used as punch; *h*, deer bone converted into spatulate object.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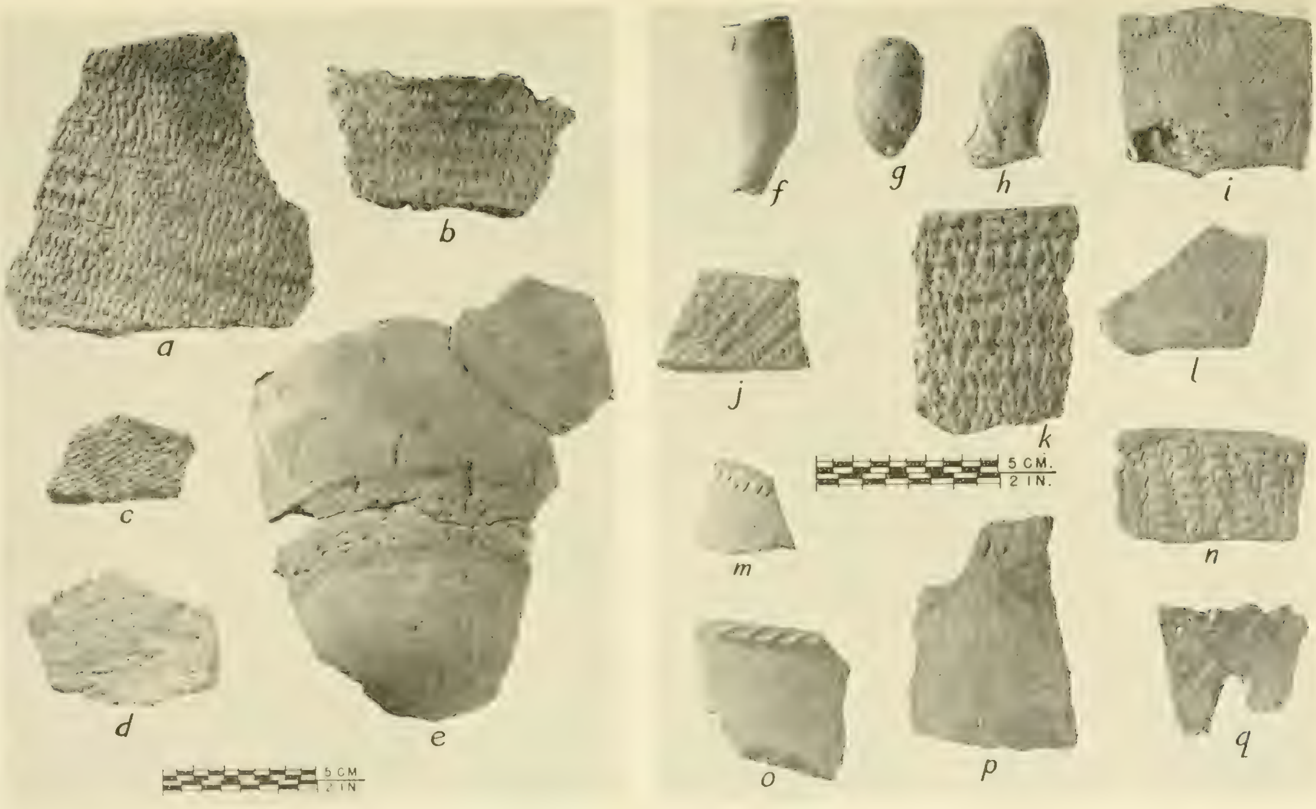
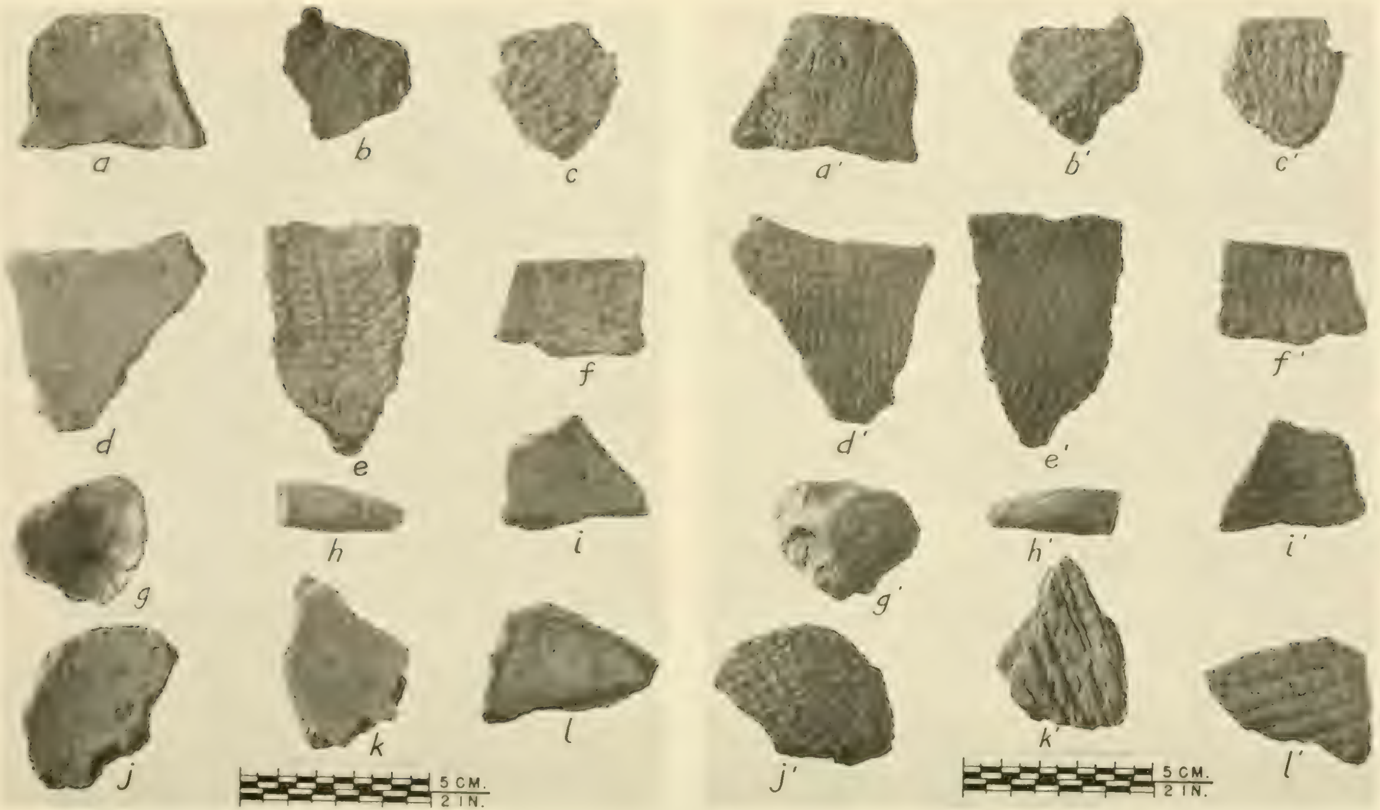
Ceramic remains from site 44Mc53. *Left:* Interiors of vessels. *Right:* Exterior surface treatment. In a number of cases the treatment was carried over into the interior of the vessel: *a*, *f*, and *g*. All are rim sherds.



Ceramic remains from site 44Mc53. *a–c*, Textile impressed; *d*, plain; *e*, partial combing on plain with unique basal treatment of the vessel; *f*, bowl fragment of clay pipe; *g*, unidentified clay object; *h*, tongue-shaped handle; *i*, *l*, *p*, plain; *j*, fabric marked; *k*, textile impressed; *m*, *o*, combed; *n*, twined textile impressed; *q*, indefinite surface treatment.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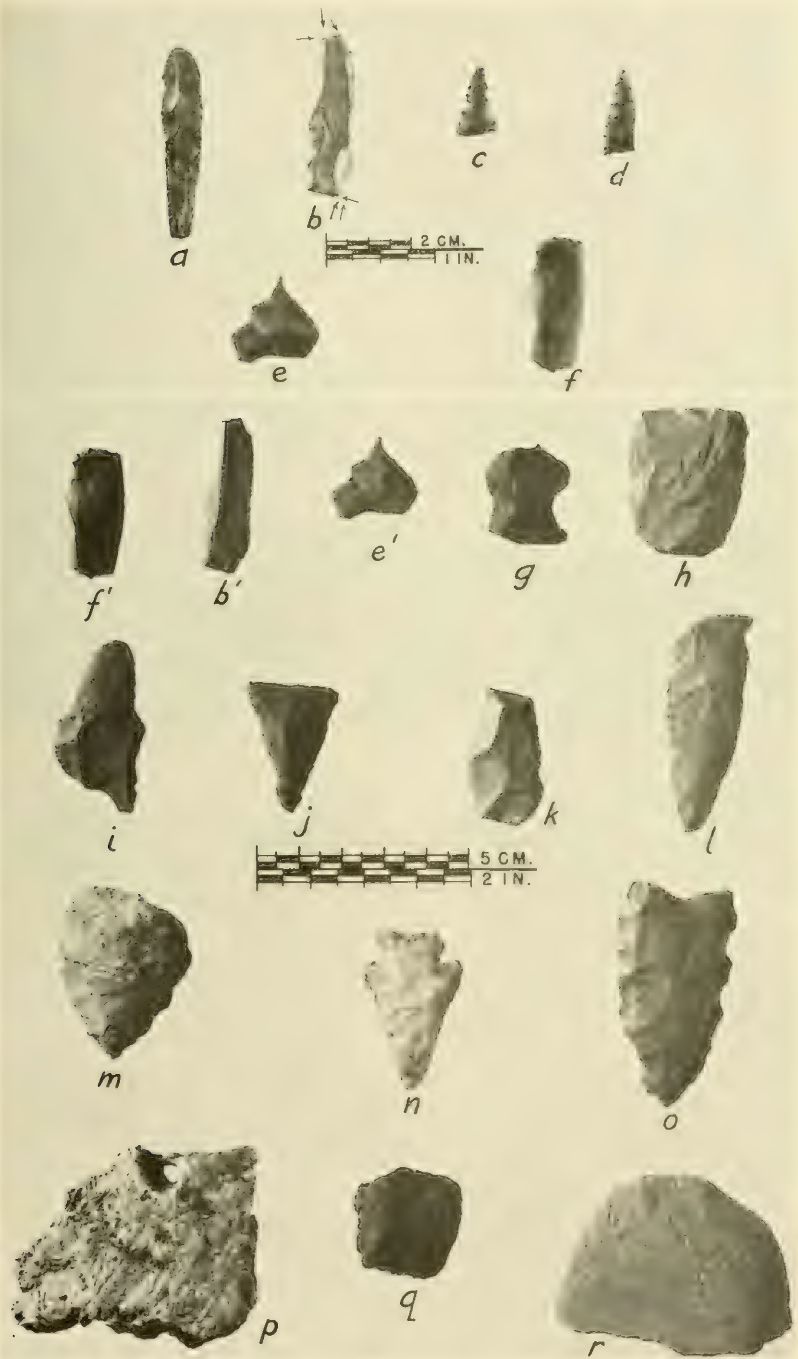
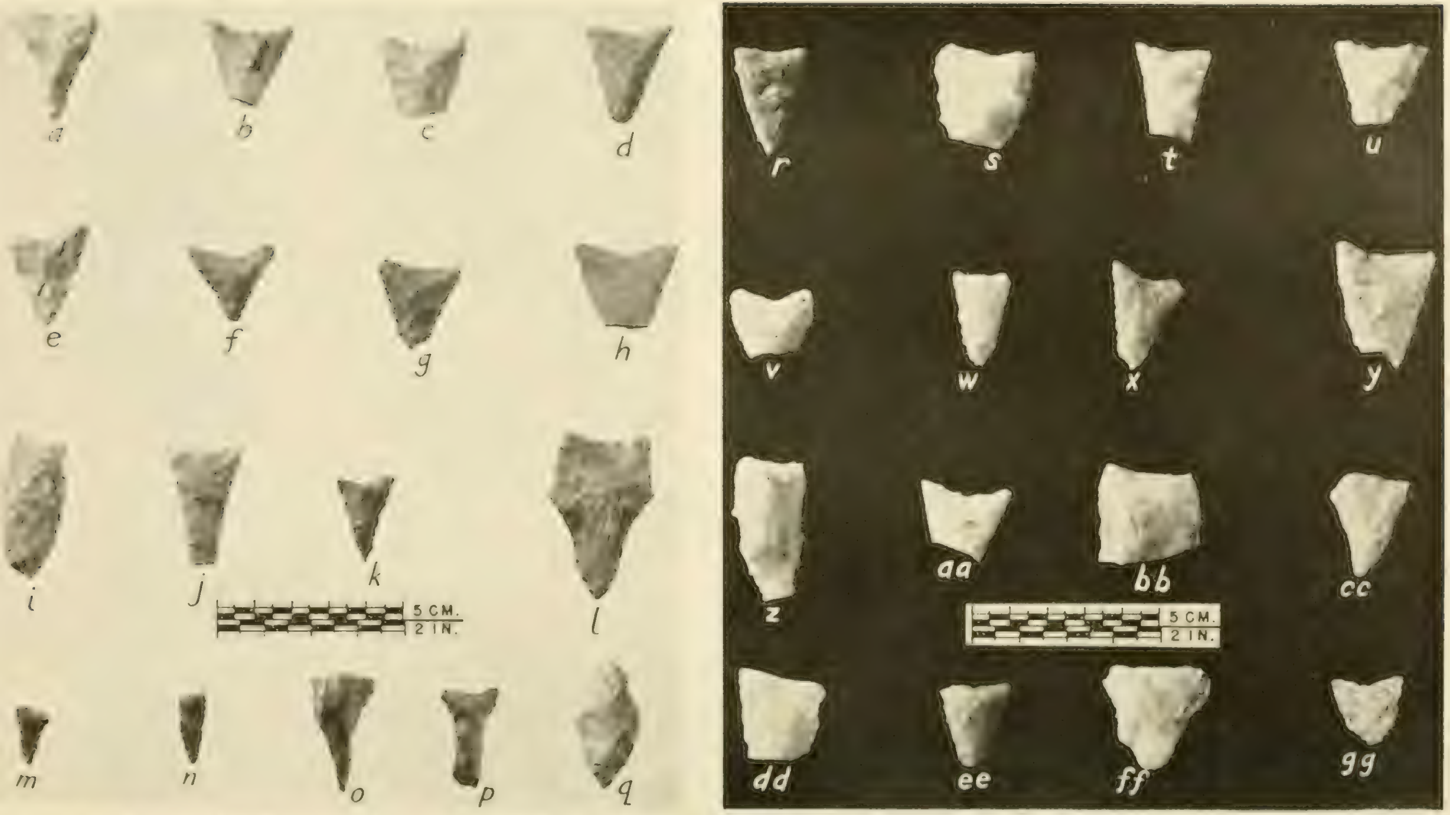
Ceramic remains from site 44Mc53. Interior and exterior surface treatments. *Left:* Interior surfaces. *Right:* Varied exterior surfaces.



Stone artifacts from site 44Mc53. *a–f*, Microlithic tool assemblage; *b*, burin with arrows indicating the angle at which the various chips were struck; *a*, small knife; *c*, *d*, projectile points; *e*, graver point; *f*, scraper; *g*, graver point; *h*, bifaced tool; *i*, lingulate blade whose purpose is unknown; *j*, *l*, *m*, *n*, *o*, projectile points of a later culture; *p*, steatite potsherd with mending hole; *q*, fragment of red paint; *r*, hammerstone.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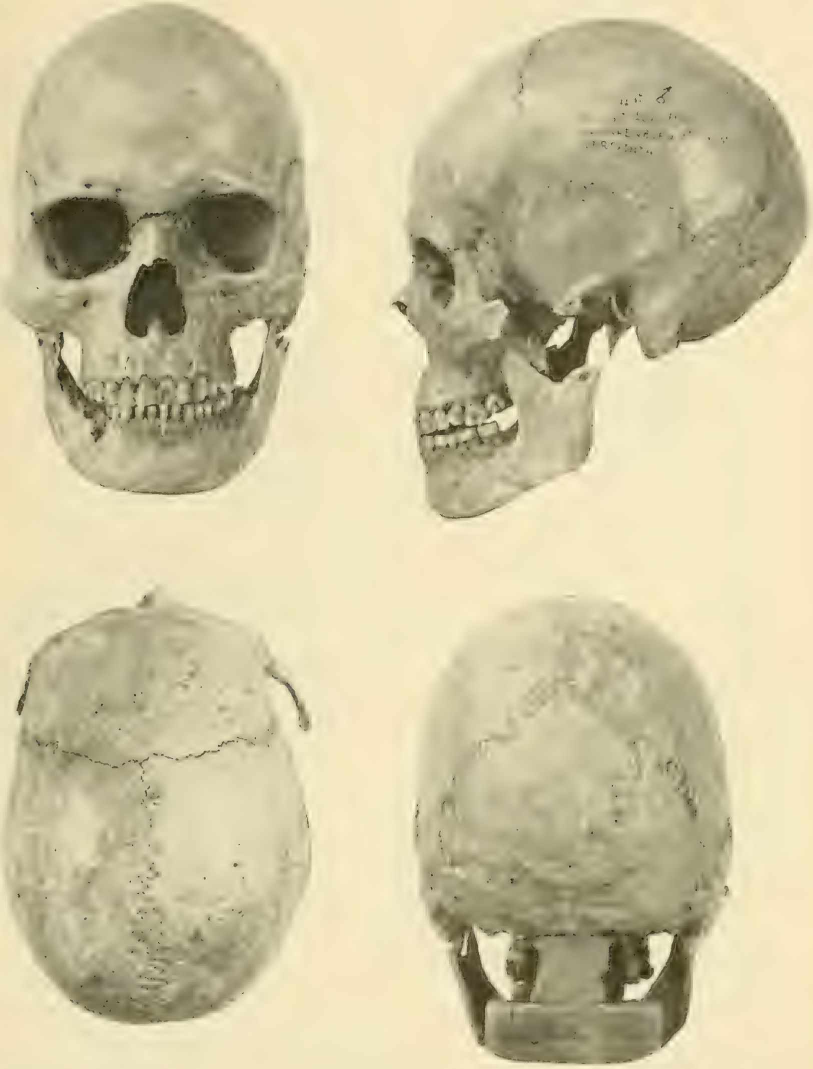
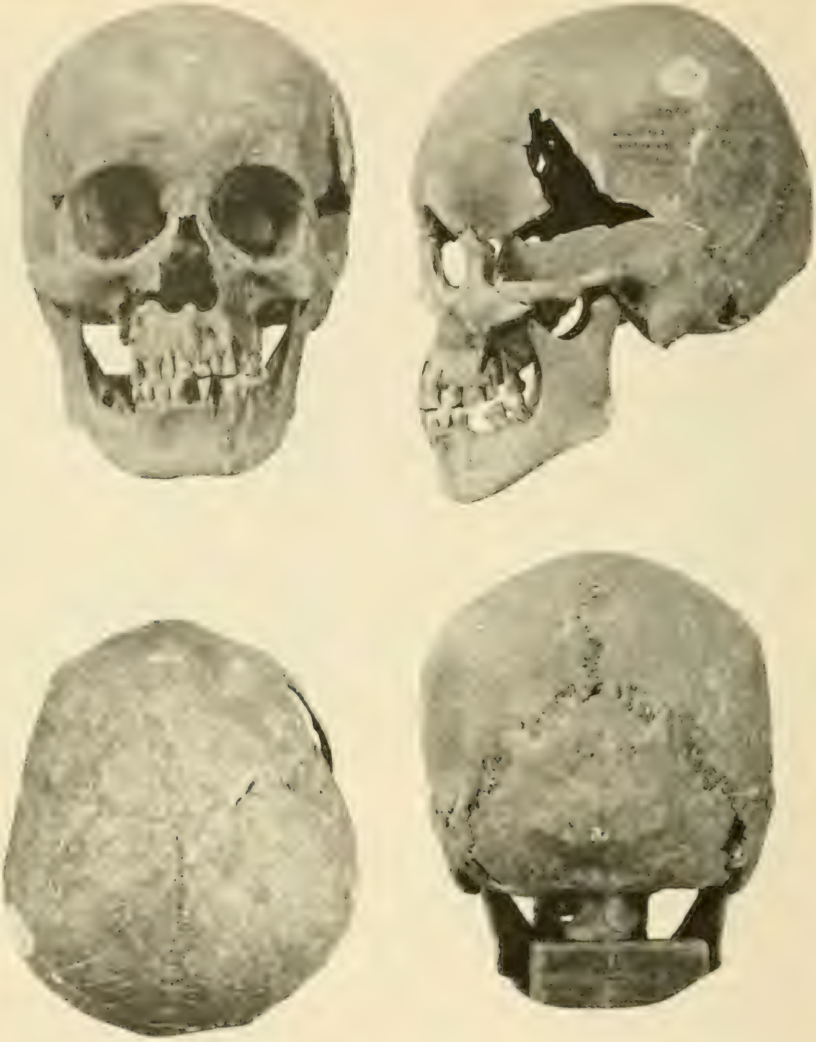
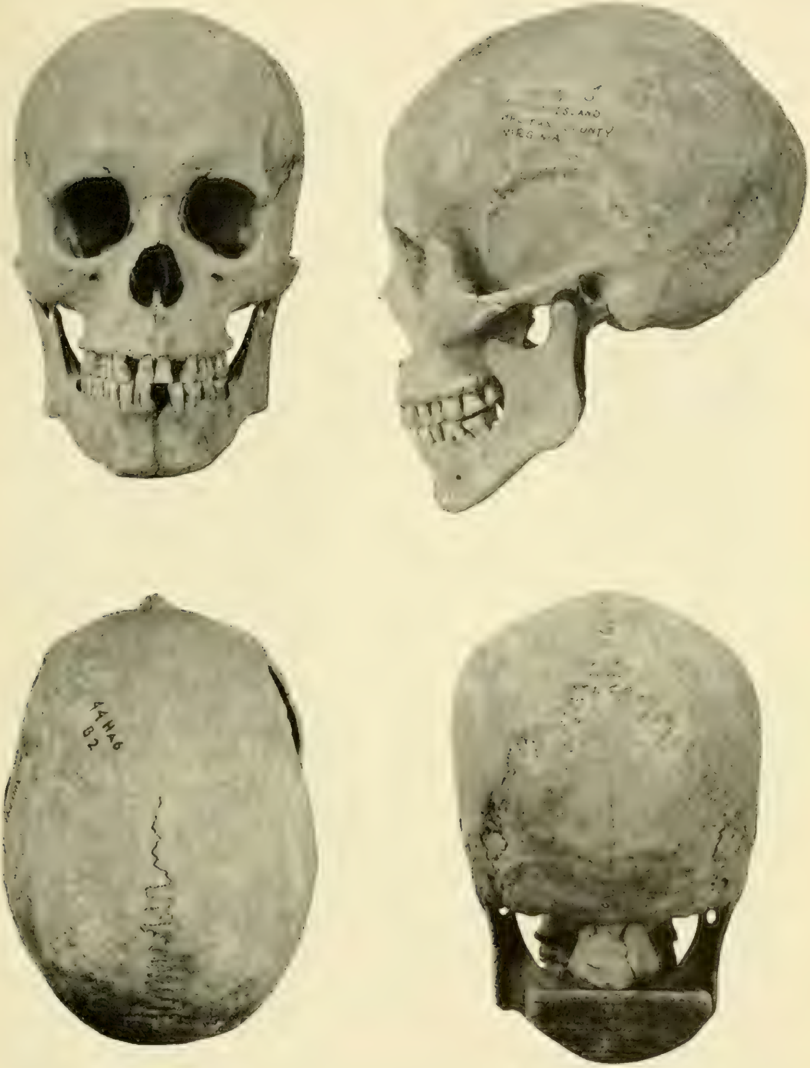
Stone artifacts from site 44Mc53. *a–n*, Projectile points of chert; *o–p*, drills; *q*, chert point; *r–gg*, projectile points of quartz or quartzite.



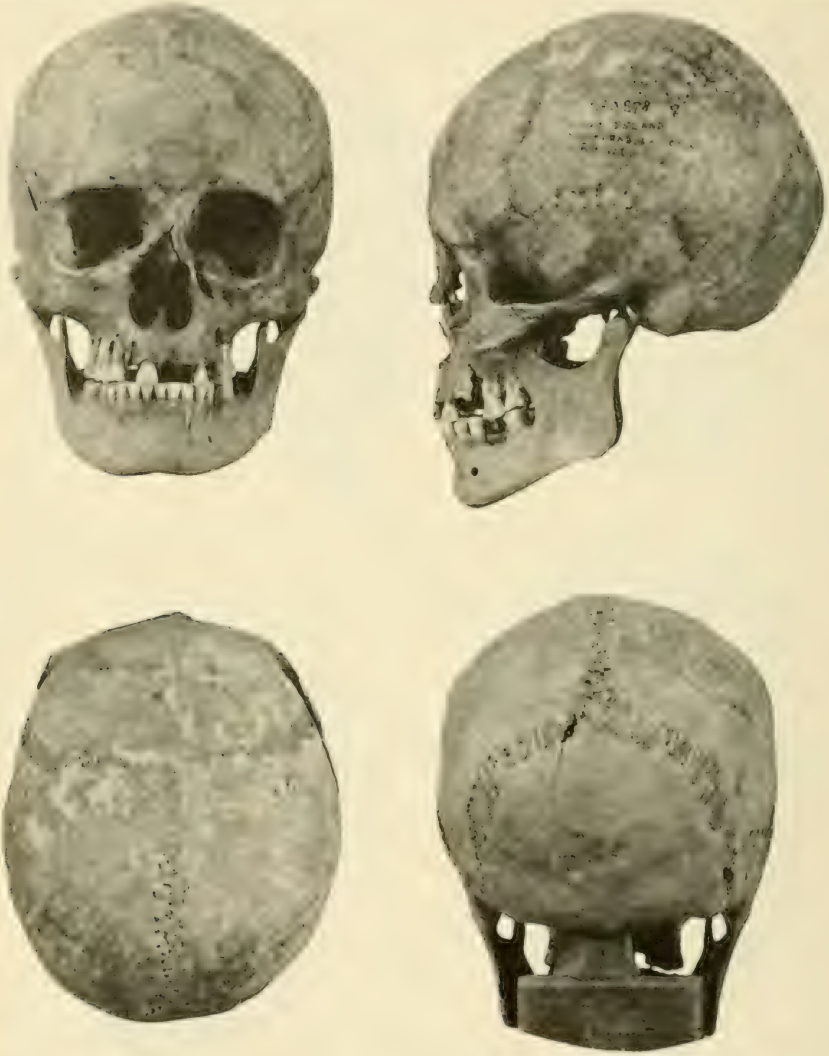
Four views of male skull from Tollifero site (burial 2, USNM 380891), photographed in Frankfort plane; showing longheaded type.



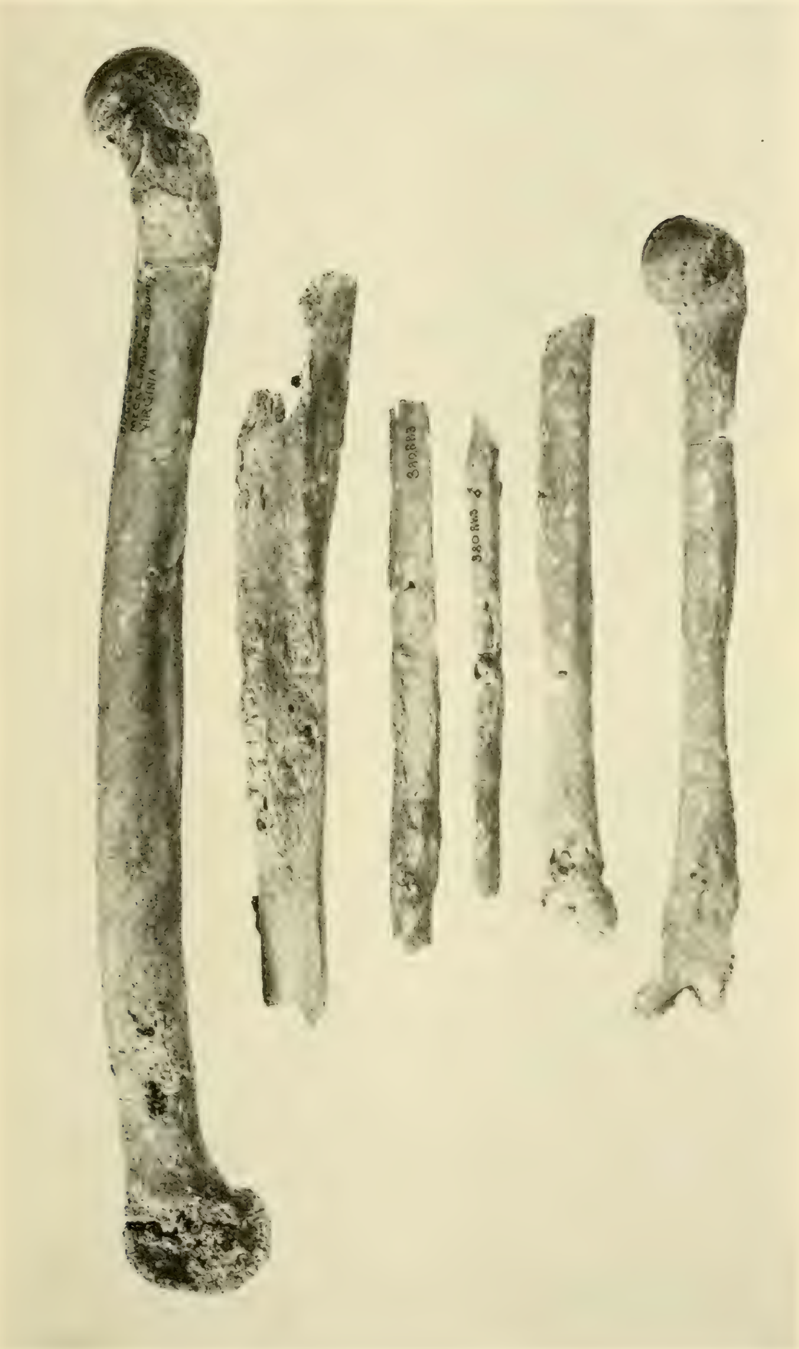
Four views of male skull from Tollifero site (burial 24, USNM 380906), photographed in Frankfort plane; showing roundheaded type occasionally occurring at this site.



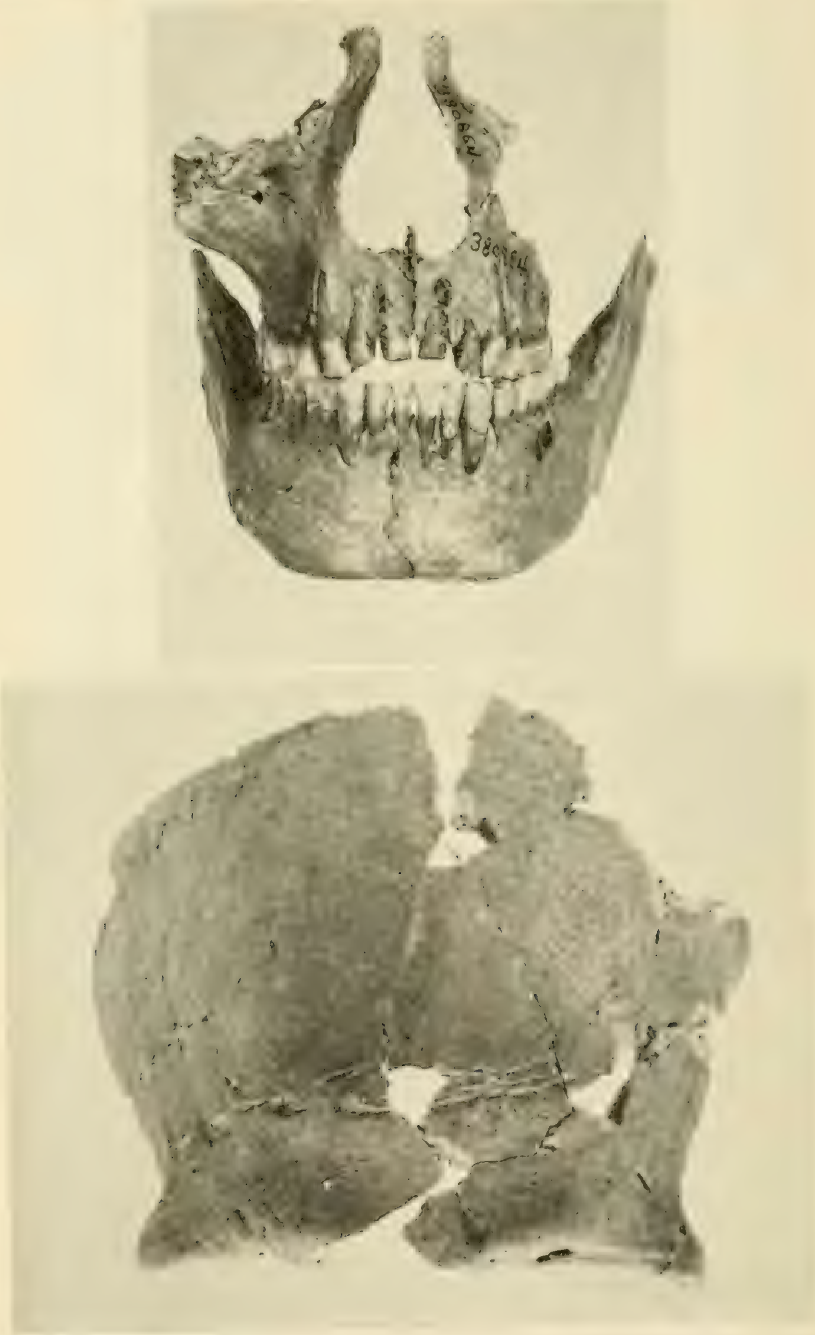
Four views of male skull from Clarksville site (burial 6, USNM 380846), photographed in Frankfort plane; showing longheaded type.



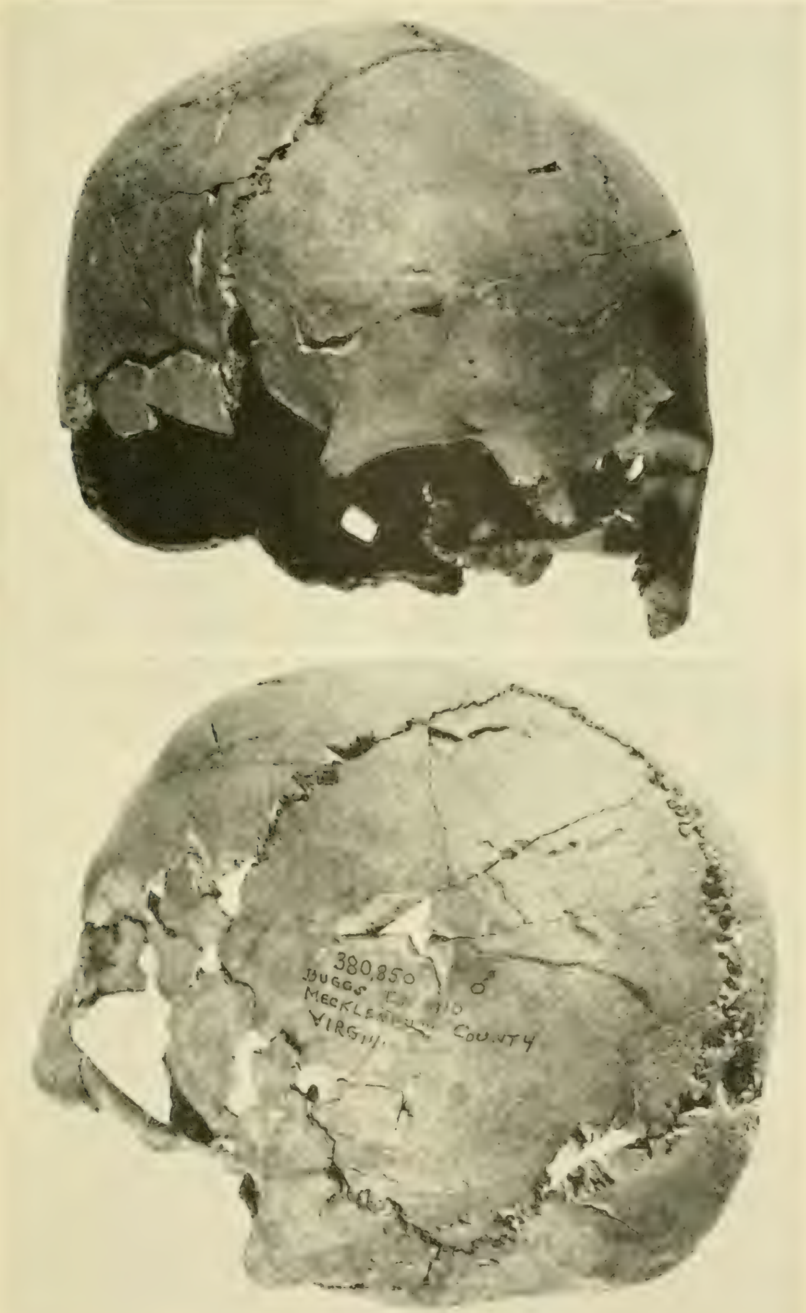
Four views of female skull from Clarksville site (burial 55, USNM 380878), photographed in Frankfort plane; showing roundheaded type.


MECKLENBURG COUNTY
VIRGINIA
380883
380883 ♂

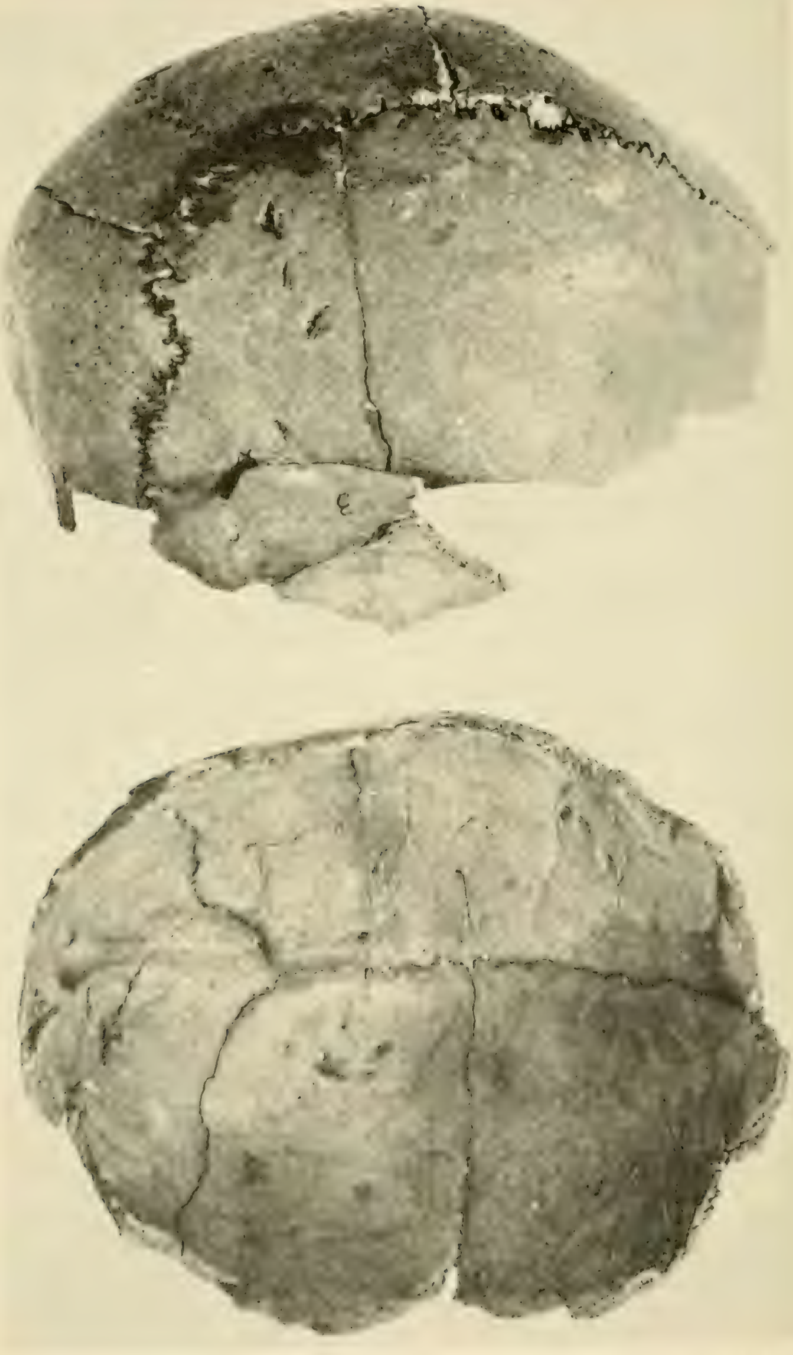
Long bones of Clarksville male, 40–50 years old (burial 69, USNM 380883), showing extensive pathological lesions, probably osteomyelitis.



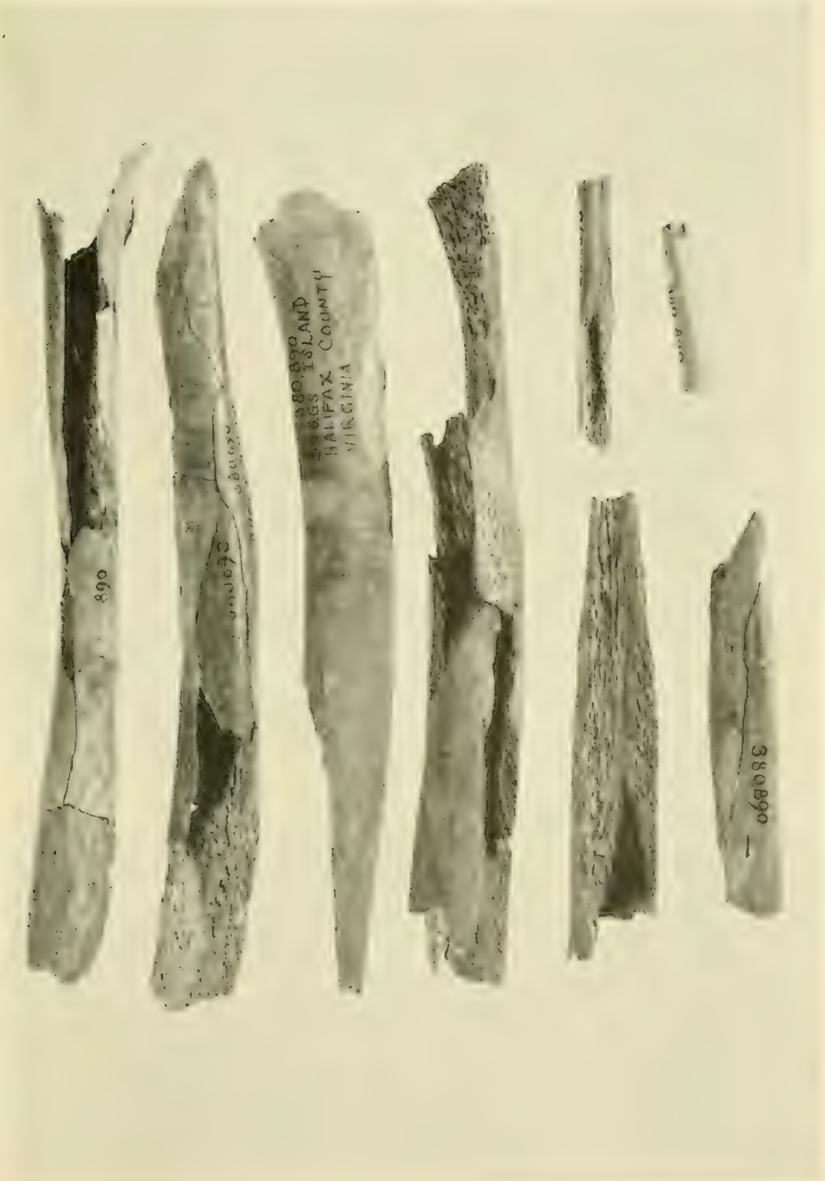
Upper, Face of young Clarksville female(?) (burial 33, USNM 380864), showing unusual occlusal pattern. *Lower*, Frontal bone of older male from Clarksville site (burial 35, USNM 380865), showing cut marks suggestive of scalping.



Skull of young adult male from Clarksville site (burial 14, USNM 380850), showing cut marks on frontal and parietal, suggestive of scalping.



External and internal surfaces of child's skull vault from Tollifero site (burial 1, USNM 380890), showing cut marks on surfaces, suggesting removal of scalp and brain before burial.


890
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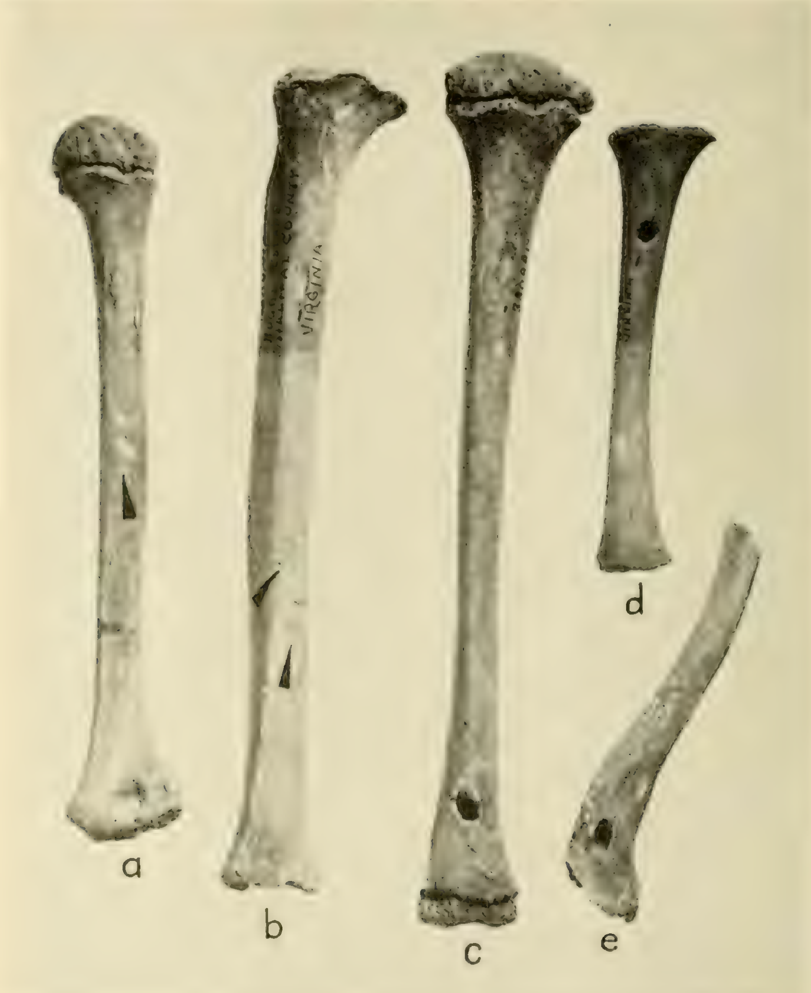
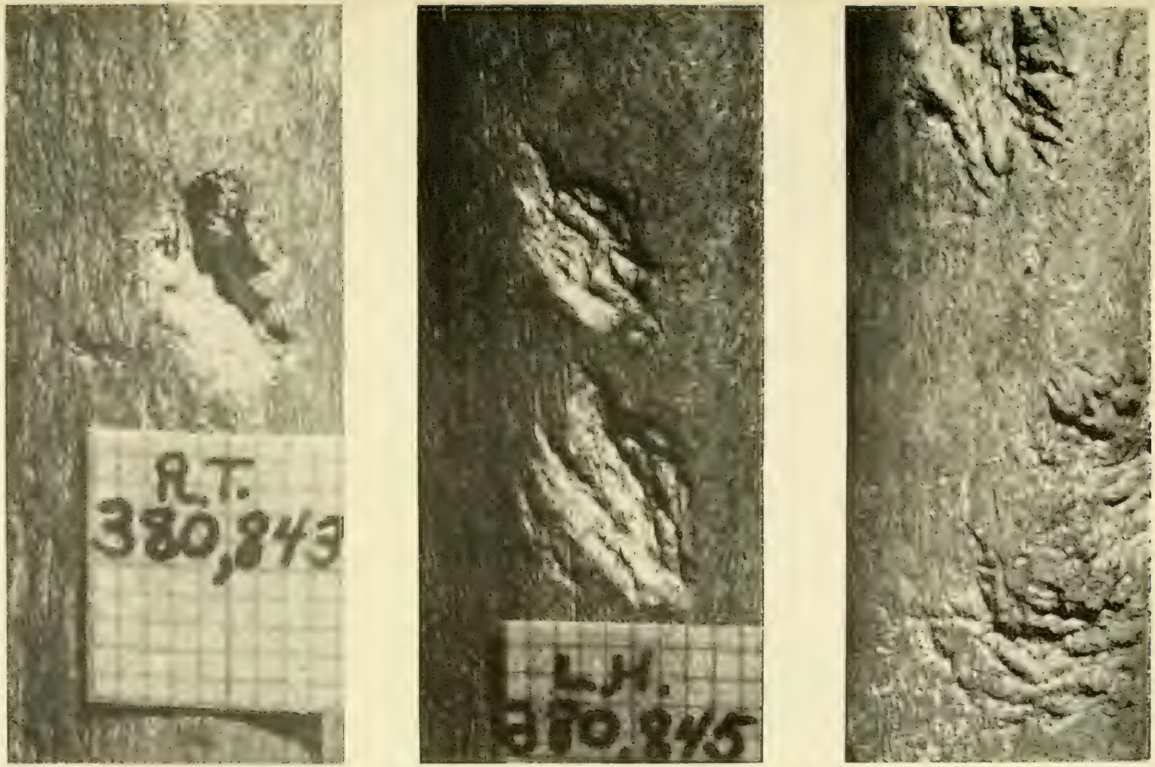
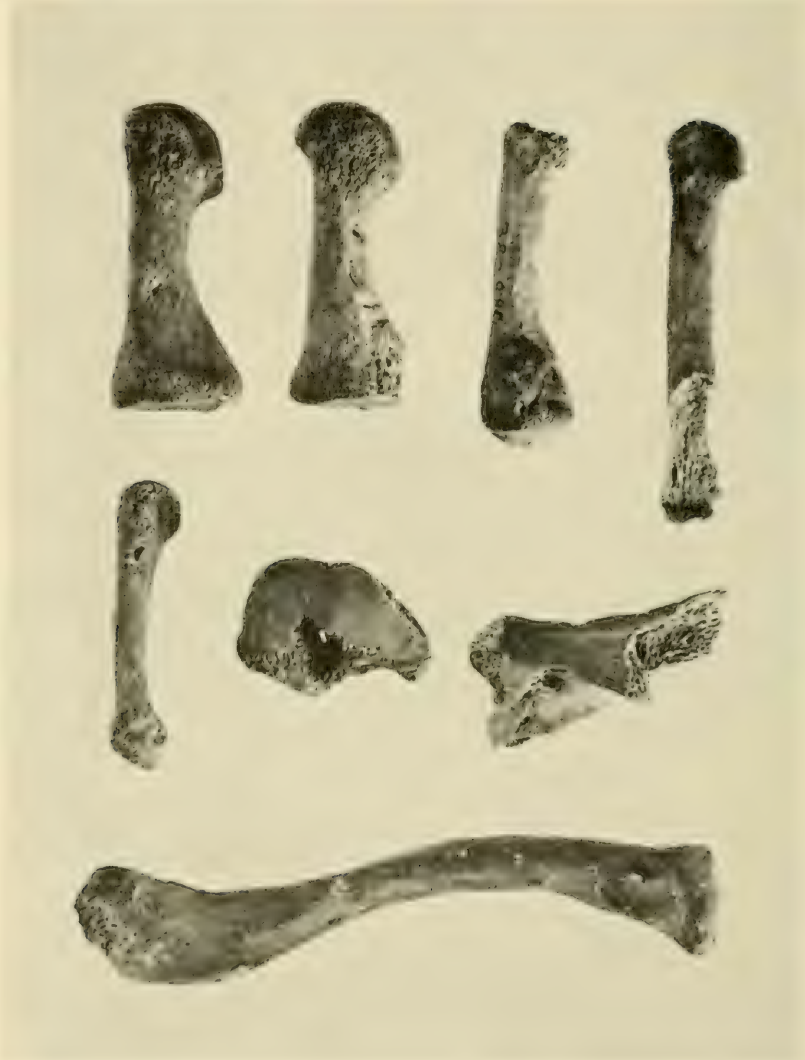
Long bones of child from Tollifero site (burial 1, USNM 380890), showing (1) evidence of pathology and (2) pattern of cracking, suggesting intentional breakage before burial. Cut marks, such as those shown in plates 106 and following, are also found on the surfaces of these bones.



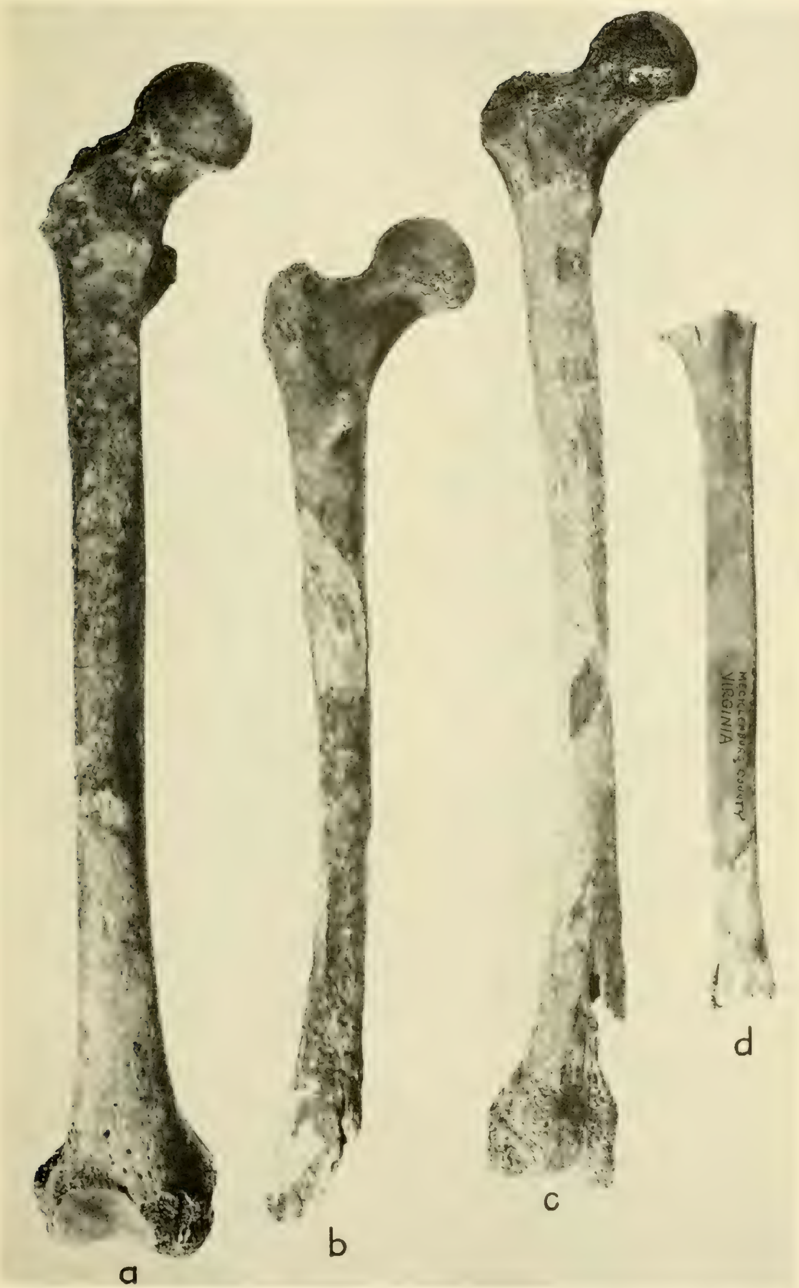
Long bones from the Clarksville and Tollifero sites, showing cuts and holes made on the bones preceding burial: *a*, Humerus of child about 8 years old (Clarksville burial 5, USNM 380845); cut marks indicated by black arrows are shown in enlargement in plate 107, *center*. *b*, Tibia of child about 10 years old (Tollifero burial 36, USNM 380912); cut marks indicated by black arrows are shown in enlargement in plate 107, *right*. *c*, Tibia of child about 8 years old (Clarksville burial 65, USNM 380881); hole cut in posterior surface just above ankle joint. *d*, Tibia of child about 3 years old (Clarksville burial 16, USNM 380851); hole cut in posterior surface just below knee; there is a similar hole cut in the lower anterior surface of the same bone. *e*, Left clavicle of young adult male (Clarksville burial 64, USNM 380880); hole cut in lower surface of distal end. (Damage to other bones of this skeleton is shown in plate 108.)



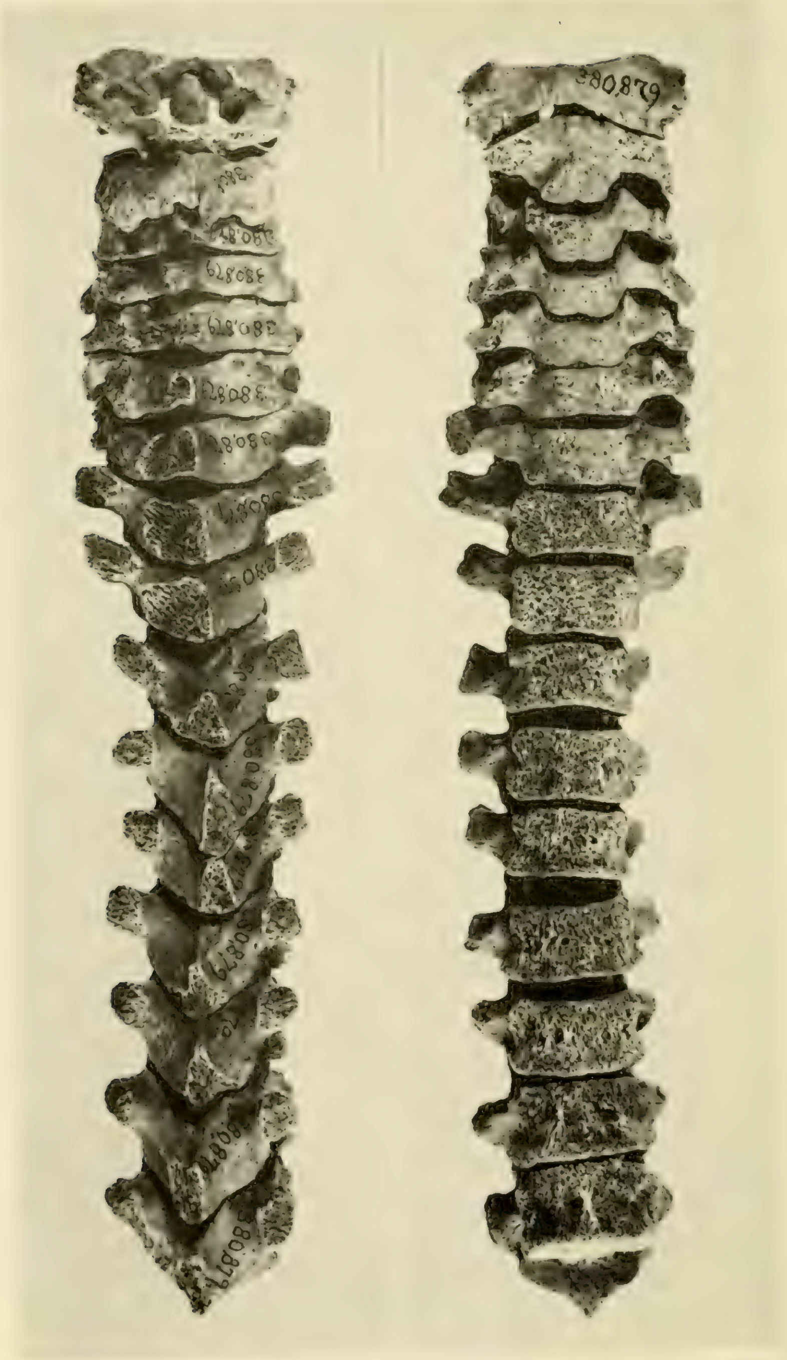
Enlargements of cut marks on surfaces of bones from Tollifero and Clarksville sites: *Left*, Pit on anterior surface of right tibia of adult female (Clarksville burial 3, USNM 380843). *Center*, Cuts on left humerus of child about 8 years old (Clarksville burial 5, USNM 380845), shown in plate 106,*a*. *Right*, Cuts on tibia of child about 10 (Tollifero burial 36, USNM 380912), shown in plate 106,*b*. (Graph paper marked in 1 mm. squares indicates enlargement.)



Holes, pits, and scrapings of surfaces of smaller bones from Clarksville site, illustrating less severe types of damage: *Top row*, left to right, left first metatarsals, USNM 380880 and 380847, showing holes cut on medioplantar surfaces; left metatarsal IV, USNM 380880, showing scraping on plantar surface; right metatarsal III(?), the proximal end of which had been cut away and the medullary canal hollowed slightly. *Middle row*, Right metacarpal V, USNM 380880, with hole cut in lateral surface; right navicular of foot, USNM 380871, with hole from distal articular surface penetrating to proximal articular surface; left pubis, USNM 380847, with holes cut into the anterior surface just below the iliopectineal eminence. *Lower row*, Inferior surface of right clavicle, USNM 380843, showing notches in anterior border near the middle and near the sternal end.



Long bones from Clarksville site showing more severe types of damage: *a*, Right femur, USNM 380871, showing rounded pits on anterior surface of upper and middle shaft, with some scraping of surface. *b*, Left femur, USNM 380854, showing denuded areas (lighter) on the posterior surface of the upper and middle shaft; dark areas represent intact bone surface. *c*, Right femur, USNM 380864, showing extensive denuded areas (lighter) on anterior surface, with extensive damage to condyles. *d*, Left humerus, USNM 380864, showing surface of upper shaft nearly intact, but surface of lower shaft removed by deep scraping or cutting.



Upper part of the spine of Clarksville burial 56 (USNM 380879), showing (*left*) cuts on posterior surface, removing dorsal surfaces of spines and lateral processes; and (*right*) uniform damage to anterior surface of the thoracic vertebrae. The other surfaces are nearly intact.

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